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ON THE

SIGNS AND DISEASES

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PREGNANCY.

WORKS BY THE SAME AUTHOR.

- A PRACTICAL TREATISE ON THE DISEASES OF INFANCY AND CHILDHOOD. Post 8vo. London, 1858.
- A MANUAL OF THE PRACTICE OF MEDI-CINE. Fourth Edition. Royal 32mo. London, 1860.
- A MANUAL OF CLINICAL MEDICINE AND PHYSICAL DIAGNOSIS. Forming a complete Introduction to Hospital Practice. Royal 32mo. London, 1855.
- MEMORANDA ON POISONS. 32mo. London, 1848.
- SELECT MEDICAL FORMULÆ. Reprinted from the "Manual of the Practice of Medicine." Second Edition. 32mo. London, 1854.

ON THE

SIGNS AND DISEASES

OF

PREGNANCY.

BY

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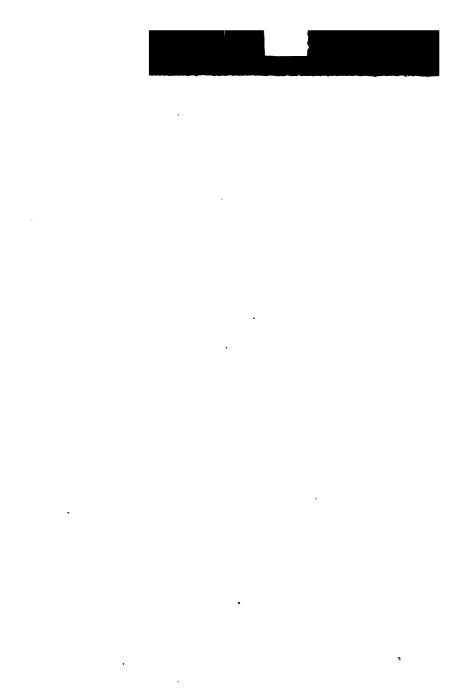
FELLOWS OF THE OBSTETRICAL SOCIETY OF LONDON,

AND TO THE PRESIDENT,

EDWARD RIGBY, M.D., F.L.S.,

THIS VOLUME

Is with grent Bespect Inscribed.



PREFACE.

When the plan of the present volume was roughly sketched, many months since, I determined that my work should contain a concise, but clear account of all that is at present known with regard to the Signs and Diseases of Pregnancy.

In carrying this design into execution, the attempt has been made to illustrate the subject as freely as possible, by giving the clinical history and treatment of many important cases. Where it has been practicable, I have of course resorted to my own "Case Books" for examples; but no hesitation has been felt at laying under contribution, with due acknowledgment, the writings of others, when the insufficiency of my own notes has rendered such a proceeding necessary.

The references which are made to old authors, in the following pages, may perhaps appear more numerous than is desirable. But on this head let me say, that when I commenced practice some thirteen years ago, my horæ subsectivæ were not altogether few and far between; and the attempt was made to turn them to account by studying and glancing through very many dusty old volumes, as well as by much miscellaneous modern reading. The result to myself has been invalu-

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PREFACE.

able, and it is hoped will be of some benefit to my readers; since this work may be said to contain, not the views of a single individual only, but in some measure the experience of those great ones of the past who can now only speak to us through their writings.

10, Charlotte-street, Bedford-square, 1st October, 1860.

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SIGNS AND DISEASES OF PREGNANCY.

CHAPTER I.

GENERAL OBSERVATIONS ON THE STATE OF PREGNANCY, ETC.

- Introductory remarks:—the clinical study of disease:—importance of auscultation in detecting pregnancy.—2. Definition of pregnancy:
 —the varieties.—3. The limits of the generative faculty in women and men.—4. An inquiry into the number of children a woman can bear.—5. Multiple births:—fabulous tales:—statistical facts.—6. Age at which women are most prolific.—7. Anxiety of men to discover the sex of the factus while it is still in the uterus.—8. Statements of patients in doubtful cases:—women not always aware of their condition.—9. Brief remarks on the function of reproduction as effected in the various classes of the animal kingdom.—10. Mode in which pregnant women should be treated:—mortality from child-birth:—means to be adopted to lessen the dangers of parturition.
- 1. An elaborate argument is quite unnecessary to prove that few subjects connected with obstetric medicine can be of much greater interest or importance than the consideration of the signs and symptoms indicative of pregnancy; the difficulty—especially during the early months, when the development of the uterus is inconsiderable—of forming a correct opinion as to the existence or non-existence of this condition, the serious responsibility often incurred by the practitioner in stating his views, and the disastrous results which

not uncommonly follow from an erroneous diagnosis, all rendering it imperative that great caution should be exercised, and that the physician should be well acquainted with those general rules which must guide him in drawing his conclusions. To advise that frequent opportunities should be sought for verifying the statements contained in the following pages might be deemed impertinent by those who I trust will try to glean information from this volume, since every tyro in midwifery is aware that knowledge derived from reading is of little value by itself. The remark of Dryden, that books are to be regarded as spectacles with which to read Nature, applies peculiarly to medical writings. Indeed no one will be found to deny that he who would become skilful in the diagnosis of disease, in the present day, must combine the study of the literature of our profession with the personal observation of the sick; for although a certain delicacy of the senses, with the capability of distinguishing between various slight impressions, can be acquired by practice alone, vet the tactus eruditus, or faculty of properly interpreting these differences, demands a knowledge and consideration of the subject in all its bearings.

It was long since well said by D'Alembert, that the physician is not—as is the vulgar opinion—he who cursorily and without discrimination accumulates facts in the course of a large practice; but rather the man who exercises great scrutiny and penetration in making his investigations, and joins to what he has himself observed an acquaintance with the far greater number of observations that have been made in all ages by men animated with the same healthy impulse. Such knowledge constitutes the true experience of the physician. Believing implicitly in the truth of this remark, I need hardly say that it has been my endeavour to act up to

its spirit. The attempt has been generally made on my part to render each case met with in practice a study in itself: to compare it not merely with like examples previously under treatment, but also with recorded instances in any way bearing upon it; as well as to note minutely the effects of the different remedies employed. In pursuing this plan the greatest assistance has been derived from reading the writings of those who have published the results of their experience; and having had greater opportunities for practically studying the diseases to which women are liable during pregnancy than fall to the lot of many, I have felt that a debt has been incurred by me. How far I have been successful in partly repaying this obligation, my readers must judge for themselves while perusing this volume.

The author of the imperishable treatise De l'Auscultation Médiate, ou Traité du Diagnostic des Maladies des Poumons et du Cœur, has not only claims upon our gratitude for the light which his genius has thrown upon the diseases of the chest, but also for the results which have flowed from his discoveries, in enabling us materially to simplify the diagnosis of pregnancy. In the middle of the nineteenth century, such an impostor as Joanna Southcott would be detected immediately; and no woman could now-as this "chosen vessel" succeeded in doing in 1814-lead medical men to state that a distended urinary bladder, or a flatulent colon, was an impregnated uterus at the sixth or seventh month of gestation. The charlatan and plausible quack will still find followers and admirers, it is true, for without a doubt gross credulity and superstition even vet reign supreme over many uneducated or weak minds; but it is probably less injurious in a moral point of view to put faith in table-turning, clairvoyance, and infinitesimal doses of drugs, than to believe—as many thousands did—that a silly old woman has been impregnated by supernatural influence, and that she is about to be delivered of the Holy Ghost personified!

The advantages to be derived from the practice of auscultation, not only in detecting pregnancy, but in deciding upon the life or death of the fœtus, are now so manifest, that it is surprising they were not at once appreciated. Yet, just as Laennec was laughed at for using the stethoscope, in the years 1818 and 1819, at the Parisian Hospital Necker, so attempts to hear the pulsations of the fœtal heart were deemed useless and ridiculous; and many years elapsed before the authors of systematic works on midwifery thought proper to speak of the practice of auscultation. In looking back to the history of science and art, it is curious to observe with what pains some men step aside from their accustomed duties to oppose the progress of knowledge; and vet in spite of their industry, and often of their greatthough misdirected-abilities, how ultimately futile are their efforts. Any one who attempts to benefit his fellow-men by the promulgation of some novel fact, must make up his mind to meet with antagonism: and happy will he be, if-his private character escaping abuse—he have to submit to no further opposition, than that his discovery is either useless or obsolete.

The following opinion of Dr. Lyall, on a subject of which he confesses himself to have been ignorant, now merely excites our contempt or laughter, though doubtless it had some little weight when written. He observes—"Of the utility or uselessness of auscultation, in discovering pregnancy, we have had no experience. It is said that the operation may be performed, either by applying the ear to different parts of the abdomen, or by using the stethoscope of Laennec. Reasoning

à priori, we anticipate little advantage from such an examination."*

More extraordinary, because promulgated ten years subsequently, was the view taken by Dr. James Hamilton, the Professor of Midwifery in the University of Edinburgh, who gives some curious reasons for not investigating the subject of obstetric auscultation. The chief are, that he never adopted new modes of practice when experience had taught him that the old ones were successful; that,-"in the better ranks, no prudent practitioner would have recourse to means calculated to excite alarm in the patient, and surely the ceremony of applying the stethoscope must be very formidable to susceptible females;" that he believed there " must be some fallacy in the observations of those who have supposed that the stethoscope can detect the pulsations of the fœtal heart;" and lastly, admitting that the placental souffle and fœtal heart can be heard by the stethoscope, "he is convinced that few cases can occur in actual practice where this test can be required, or can be applied."+ But if these remarks of Lyall and Hamilton call forth our wonder, what will be the feeling raised by a perusal of Dr. Francis Adams' present doubts on the question of fætal auscultation. This gentleman-the learned translator of the works of Paulus Ægineta-believes that success in detecting the sounds of the fœtal heart depends in a great measure upon the circumstance whether or not the auscultator considers that he ought to detect them: and he asserts, -"that the whole system of fœtal auscultation originated soon after the dawn of general auscultation, when

Part I., pp. 154, 158, and 166. Edinburgh, 1836.

^{*} The Medical Evidence relative to the Duration of Human Pregnancy, as given in the Gardner Peerage Cause before the Committee of the House of Lords in 1825-6. With Remarks and Notes by Robert Lyall, M.D., &c. Introduction, p. 20. London, 1826. † Practical Observations on Various Subjects relating to Midwifery.

men's minds were excited by the love of novelty, and warped by many erroneous impressions and mistaken modes of thinking; and has since been mainly upheld by authority."*

To argue with Dr. Adams on this subject is useless; for if he cannot be convinced by the writings of every recent author on obstetrics. I could not hope to prove to him his error. It is, however, much to be regretted that because he could not hear the sounds of the fœtal heart in one particular instance he should therefore jump to the conclusion that physicians more skilful than himself are merely the victims of their imaginations: and I cannot but think his papers would never have been written had he only taken the trouble to visit the wards of one of our lying-in hospitals before sitting down to his desk. Much in the same unhealthy antagonistic spirit as that manifested by these gentlemen, a portion of the British public-and not an uninfluential part either-met together one evening in the month of March, 1808, to discuss the question,-"Which has proved a more striking instance of the public credulity, the gas lights of Mr. Winsor, or the cow-pox inoculation?" The orators of course proved conclusively that both gas lights and vaccination should be regarded with scorn and ignominy as gross absurdities. Let us learn from all this not to put our trust in mere à priori arguments; nor allow ourselves to be swaved by that aversion to all innovation which seems so peculiarly to afflict the medical mind after the age of forty; but rather, without encouraging a weak gullibility, to carefully weigh and practically test the opinions of other men. "There are some," says Sydenham, "who, adding nothing to medicine of their own, are angry at the most trifling addition of another." If

^{*} Medical Times and Gazette, p. 402, 22nd October, 1859: p. 615, 17th December, 1859: and p. 66, 21st July, 1860.

any such there be in the present day, let them think upon the advice of old Mauriceau to his readers, which may be as advantageously acted upon now, as when it was written:—"Since in the age we live we see most people governed rather by opinion than judgment, I desire (if you mean to profit by my book) you will read and examine it without Critical Envy, free from all preoccupation that may obscure your judgment, and hinder your acknowledging the truth of what I profess to teach. Therefore, follow not such as condemn a conception when they understand it not, and believe it false because it is new; neither imitate those who seeking only to carp at words, neglect the sense of the discourse."*

2. Pregnancy may be defined as the condition of a woman who has conceived, and bears within her the product of conception. It extends from the moment of conceiving until the expulsion of the ovum or fœtus: whether this take place prematurely, or at the proper period when the nine calendar months of gestation have elapsed. There are two kinds of pregnancy, viz., uterine and extra-uterine; in other words, the ovum may be developed within the uterine cavity, or outside the uterus. Uterine pregnancy is conveniently divided by French authors into three kinds:-the simple, where there exists but one fœtus; the compound, where there are two or more children; and the complicated, where, together with a fœtus, there co-exists some pelvic or abdominal tumour, or some structural disease of the uterus, rendering the diagnosis difficult. The term pseudopregnancy is also sometimes applied to diseases which simulate pregnancy; and though such an expression should hardly have a place in any scientific nosology,

^{*} The Diseases of Women with Child, and in Child-Bed. Translated from the French of Francis Mauriceau by Hugh Chamberlen, M.D. 7th edition. London, 1736.

yet we shall subsequently find that it is very difficult to propose a good substitute.

3. The limits of the generative faculty in women are those of the function of menstruation; i.e., from about the fifteenth to the forty-fifth or forty-eighth year. Some few girls, however, menstruate as early as the eleventh, twelfth, or thirteenth year; and about a dozen extraordinary cases are to be found scattered through medical literature in which female children have had their menses appear when only two, three, and five years of age. The most recently recorded case of this kind with which I am acquainted is that of Mary Deane, who was born at Manchester on the 7th January, 1853. In May, 1858, when examined by Mr. R. B. Smart, she was three feet seven inches high, and her weight-in her clothes-was fifty-two pounds and a half. Her general appearance was wonderfully like that of an adult female, of short stature. The menses appeared every month, as regularly as in their normal manifestations, and had done so since she was three years and six months old; the bust was full and womanly, the breasts larger and more protuberant than in most girls who have recently attained puberty, while the nipples were well developed; and the pubes was sprinkled over with light-brown hair about an inch in length, the mons veneris being prominent, the labia externa and nymphæ large, and the vagina capacious, with a fringe-shaped hymen. It need hardly be added that the intellectual and moral faculties exhibited no signs of precocity at all commensurate with the forward development of the body. For six months prior to the appearance of the catamenia the child seemed ailing, she had a leucorrheal discharge, and complained of headache, drowsiness, with pains in the back and groins; but since the first menstrual flow she had gained in flesh, and been hearty and well. The

catamenia generally lasted four days, and were natural in quantity.*

The earliest age at which pregnancy is positively known to have occurred in this country is eleven years. The case is recorded by Mr. Roberton, of Manchester: -A girl who worked in a cotton factory became pregnant in her eleventh year. When in labour she was seized with convulsions; but was delivered of a full-grown still-born child without unusual difficulty, and she recovered favourably. Mr. Thorpe, who attended the girl, was at the trouble of examining the registers of her birth and christening; and he satisfied himself that she had conceived in the eleventh year of her age, and that at the time of her delivery she was only a few months advanced in her twelfth year. Her figure was that of a well-grown young woman; her mammæ were fully developed; and it was proved that she had menstruated before she became pregnant.+

. The following is a second example of early pregnancy: -At the Coventry Assizes of August, 1848, Julia Sprayson preferred a charge of rape against her uncle, who was convicted of the assault, and sentenced to two years' imprisonment. This girl began to menstruate when ten years and six weeks old; and it was distinctly ascertained that there had been a regular return of the catamenial discharge, in somewhat profuse quantity, up to the period at which conception took place. The criminal intercourse first occurred about the middle of November, 1847, and was repeated on four occasions, at weekly intervals; but as the catamenia had appeared during the last week of that month, and did not recur in the Christmas week, she dated conception from the latter period. She was delivered of a healthy but

^{*} Medico-Chirurgical Transactions. Vol. XLI., p. 455. London, 1858. + Essays and Notes on the Physiology and Discuses of Women, and on Practical Midwifery. By John Roberton. P. 30. London, 1851.

rather small child, on the 16th September, 1848, after a short and favourable labour. Mr. John Smith, who attended her, took the trouble of consulting the registers both of birth and baptism; and he found the former to bear the date of 13th February, 1836, while the latter was the 7th March of the same vear.*

When the menstrual flow has once fairly ceased at any age between forty and fifty, it does not necessarily follow that it has permanently stopped. Dr. Tilt mentions the instance of a lady in whom menstruation ceased at forty-five, was absent for two years, then returned with regularity, and was followed by pregnancy at fifty. The same author refers to a case cited by Capuron, where the menses are said to have returned at sixty-five, after being absent for several years; the patient becoming pregnant, and aborting three months afterwards of a well-formed fœtus.+ Such instances as these are not common; but it is necessary to bearthem in mind, and not to infer in any given case that pregnancy does not exist, simply because "the change of life" has previously taken place, or for the reason that the patient's age is above fifty. The latest period at which parturition at the full term of gestation is satisfactorily known to have taken place is probably fifty-four; though I think Haller states that he delivered one woman in her sixty-third and one in her seventieth year. In our Court of Chancery, the succession to a large property depended entirely on the question whether a woman might have a child at sixty years of age. The Attorney-General, Sir William Horne, stated that there was no such case satisfactorily recorded, and

^{*} London Medical Gazette, p. 751. 3rd November, 1848. † The Change of Life in Health and Disease. By Edward John Tilt, M.D. Second edition, p. 18. London, 1857.

he offered to give up his client's title if any credible evidence could be produced in support of an instance; but as none was brought forward, he was deemed to have succeeded in proving his claim.* The case is very different with the male sex, who may retain the generative power to a great age. As Lord Erskine asserted in his speech on the Banbury peerage trial,-"there is no statute of limitations on the powers and faculties of man;" and he quoted the instance of Sir Stephen Fox, who married at seventy-seven, and was the father of four children by the day he was eightyone. Many other analogous cases might be quoted, but the following is the only one sufficiently interesting to merit notice. Old Thomas Parr died on the 14th November, 1635, at the age of one hundred and fiftytwo years and nine months. His body was examined two days subsequently by the illustrious Harvey, who reports that,-" the organs of generation were healthy, the penis neither retracted nor extenuated, nor the scrotum filled with any serous infiltration, as happens so commonly among the decrepit. The testes, too, were sound and large; so that it seemed not improbable that the common report was true, viz., that he did public penance under a conviction for incontinence after he had passed his hundredth year; and his wife, whom he had married as a widow in his hundred and twentieth year, did not deny that he had intercourse with her after the manner of other husbands with their wives, nor until about twelve years back had he ceased to embrace her frequently." This account was first published by Dr. Bett, who received the manuscript from Harvey's nephew. The entire report deserves perusal.+

^{*} London Medical and Surgical Journal. Vol. III., p. 687. 29th June, 1833.

⁺ De Ortu et Natura Sanguinis. Joanne Betto, M.D. Editio secunda, p. 320. Londini, 1692.

4. The inquiry is sometimes made,—How many children can a woman bear? Dr. Szukits, in replying to this question, says that he has himself observed two women, each of whom had borne twenty-four children. Osiander refers to one woman who during her married life bore forty-four children; and to another who had fifty-three. Burdach mentions that the wife of a countryman in the Moscow district had given birth to sixty-nine children in twenty-seven confinements: viz., four times, four at one birth; seven times, three; and sixteen times, twins. The History of Newcastle, published in 1797, contains a statement to the effect that a weaver in Scotland had by one wife sixty-two children: and the observation is corroborated in the Harleian MSS., Nos. 908 and 78. Of these children forty-six sons are said to have attained the age of maturity; some of them being resident at Newcastle in 1630, when a Mr. Delawal rode thirty miles to make inquiries, and satisfy himself of the truth of the report. In the year 1857 I was consulted by a woman, the wife of a shoemaker, who stated that she had been pregnant twenty-five times in thirty-three years, and that she had given birth to nineteen living children. The Vienna newspapers, in the year 1809, contained the following announcement:-Maria Ann Helm, the wife of a poor linen-weaver, in Neulerchenfeld, has been married twenty years, and has borne, in eleven labours, thirty-two children. Of these, twenty-eight are living and four are dead: twenty-six are males, and six females; and all were begotten by one man, and nursed by herself. She had at her last confinement three children; one living and two dead. Her husband was a twin, she herself one of four; her mother gave birth to thirty-eight children, and died during a labour with twins. If the foregoing extraordinary cases be true, it is certainly fortunate that they are very exceptional ones; or otherwise some corrective to the redundance of mankind would be needed. The result even of giving birth to sixteen children may be very remarkable; as the following inscription on the tomb of a Robert Thompson, in Lenham Church, Essex, serves to show. This epitaph states that "He was grandchild to Mary Honeywood of Charing, who had at her decease 367 children lawfully descended from her: 16 of her own body, 114 grandchildren, 228 in the third generation, and 9 in the fourth.

The fruitfulness of marriages in different countries is liable to some variations. According to Burdach, the proportion of children born to each marriage in England is five to seven; in Germany, six to eight; in France, four to five; and in Spain and Portugal only two to three. With regard to England and France, I believe these numbers are now too high, the average in our own country being about four children for each marriage. The same physiologist likewise says that one marriage out of fifty is unfruitful; that there is one birth on an average for every twenty-five of the population of a place: and that, taking the whole population of the world at six hundred and thirty-three millions, about fifty-one children are born every second. Great difficulty is experienced in obtaining any accurate returns of the proportion of unproductive to productive marriages; but with regard to Great Britain it will possibly be nearly correct to say that one marriage in every ten is without issue. It might be supposed that the greater the facilities for bringing up children, the greater would be their rate of increase; and that the rich consequently would be more prolific than the poor. Hippocrates did not leave unnoticed the fact, however, that the labour and privation of the lowest sphere of life was

as favourable to fertility as the indolence and affluence of the highest was adverse to it: and it still remains true that the poorest and most industrious part of mankind are the most fruitful. Among the British peers, in 1833, there were 503 existing marriages, of which no fewer than 102 had no issue.* What is the explanation of this fact? Is it true, as Adam Smith, following the doctrine of Hippocrates, suggests, that luxury, while it probably increases the passion for enjoyment, seems always to weaken, and frequently to destroy altogether, the powers of generation? Dr. Short certainly entertained this view, for he goes so far as to attribute the great prolificness of the Israelites in Egypt, as a secondary cause, to their bondage and affliction; and he even attempts to prove that, in his day, the most laborious and toilsome months of the year were the most fruitful in conceptions. A more enlightened view, however, shows us that these explanations will not entirely suffice. The true reason is probably this, that a large proportion of the upper classes possess unhealthy or feeble constitutions, which are unfavourable to increase: and it is this circumstance which explains why so many of our old families have died out. Among the higher ranks most of the children are reared. Among the lower classes more than a half are cut off before attaining their fifteenth year : and in numerous unhealthy towns, one-half of all who are born to the lower orders are cut off before they reach their fifth year. The natural physiological consequence of this is, that among the adults of the higher classes there exists a much larger proportion of individuals of feeble frames than among the lower classes.+

^{*} Journal of the Statistical Society. Vol. XIV., p. 79. London, 1851.

It has also been shown that throughout the whole of Europe, marriages are less prolific in large than small towns, and less again in these than in the rural districts.

The number of children born out of wedlock in England is rather more than six per cent, of the total number of births. Parent-Duchatelet states that in a thousand prostitutes there will scarcely be six deliveries in the course of a year; but Marc asserts that not more than two or three mature children are born from two thousand prostitutes in the same space of time. Illegitimate children are also said to be more frequently malformed than the legitimate.

5. The various fictions which have been published as to the number of children which a woman can bear at one labour, at least afford evidence of the great inventive powers of authors. From an early period men seem to have taken a pleasure in publishing these tales. as the few following show. Pliny tells us, in the third chapter of the seventh book of his "Natural History," that in Egypt as many as seven children were occasionally produced at one birth; and Seneca says, it is an acknowledged fact that the waters of the Nile possess the property of promoting fecundity. Albucasis mentions that not only may four, five, six, seven, or ten children be formed in the womb; but that in one case of abortion he has known of seven fœtuses being expelled, and in another fifteen, all well-formed.* Petrus Borelli records that a lady, the wife of the noble D. Darre, produced at one birth, in the year 1650, eight perfect children.+ Paré, "a man of much experience,

XLIV., p. 143. Paris, 1656.

^{*} Gynæciorum sive de Mulierum tum communibus, tum gravidarum, parientium et puerperarum affectibus et morbis, libri veterum et recentium. Israel Spachius. P. 444. Argentine, 1597. + Petri Borelli, Medici Regii Castrensis. Centuria 2. Observatio

some erudition, and not a little credulity," relates that in his time there was the lady of a nobleman called Maldemeure, residing near Chambellay, who produced twins the first year of her marriage; triplets the second; quadruplets the third; quintuplets the fourth; and sextuplets the fifth year, of which number only one The mother died after this delivery.* Mauriceau's opinion of the following history will hardly be disputed :- "But I esteem it either a miracle or a fable, what is related in the history of the Lady Margaret, Countess of Holland, who in the year 1713 was brought to bed of 365 children at one and the same time; which happened to her (as they say) by a poor woman's imprecation, who asking an alms, related to her the great misery she was in by reason of those children she had with her. To which the lady answered, She might be content with the inconvenience, since she had had the pleasure of getting them."+ Paré, referring to this case, completes the history, and states that 182 of the children were said to be males, as many females, and the odd one an hermaphrodite. infants were baptized in two brazen dishes, by Don William, Suffragan Bishop of Treves; the males having the name of John bestowed on them, and the females that of Elizabeth. It might be thought that the force of imagination could hardly produce anything more remarkable than the foregoing; but these cases are nothing compared to that of the estimable Bishop Otho, who solemnly asserts that he baptized one thousand five hundred and fourteen children, the miraculous offspring of his niece at one birth. It was, and perhaps is still, a doctrine of the Church of Rome, that

^{*} The Works of that Famous Chirurgion Ambrose Parey. Translated from the French by Thos. Johnson. Liber XXV., p. 648. London, 1665.

⁺ Opus jam citat. p. 40.

the ovum becomes a fit subject for baptism as early as the fortieth day after conception; and hence it may be surmised that the simple prelate performed the sacred rite on a large bunch of vesicular hydatids, which he mistook for aborted ova!

Although we cannot say with certainty what are the limits of human fertility, yet it is allowed generally in the present day that six children is the largest number which has ever been produced at one birth; and I must confess my inability to refer the student to any very authentic instance where this number has been borne. It is true that the following announcement is contained in a newspaper published in 1806; but it is not improbable that some ingenious contributor furnished it to fill up a column, just as marvellous stories are fabricated in our own time. The paragraph states that at Ohlau, in Silesia, the wife of a chimney-sweeper was delivered of six children on the 10th of December, 1805. They were all boys, and dead. The woman, who had been twice married, had altogether given birth to forty-four children. During her first marriage, which lasted twenty-two years, she bore twenty-seven boys and three girls. In her second marriage, which had lasted but three years, she had borne fourteen children; viz., three at the first labour, five at the second, and now six at the third confinement.

A second example which I have found recorded is more recent, and runs as follows:—On the 30th of December, 1831, the wife of a man named Dernian Plosou, living in the village of Dropin, in Bessarabia, was delivered of six daughters, all living. They were only a little smaller than the usual size of children at birth; with the exception of the one that was born last, which seems to have been very diminutive. The mother was not quite twenty years of age, and of a strong constitution. All

the six children lived long enough to be baptized, but died in the evening of the day of their birth. mother suffered from a severe indisposition afterwards, but subsequently got quite well.* A third and still more recent instance is that of an Irishwoman at Port Philip, who, in 1841, was delivered of six children, after a labour of sixteen hours. The infants were all females. The first was still-born, two died directly after birth, and three were thriving six or seven weeks after the labour.+

But to leave the region of romance and descend to actual facts, it may be observed, that some five or six cases at least are recorded where women have been delivered of five children at once. Dr. Garthshoret communicated to the Royal Society the particulars of a poor woman who was delivered at the twentieth week of gestation of five children. They were all females : two were born alive, and survived for a short time; and the whole proceeding was accomplished in fifty minutes. Each child presented naturally, was preceded by a separate burst of water, and was delivered by the natural pains only: there was only one placenta. same author also refers to two instances published in the Gentleman's Magazine, a journal which is generally regarded as a trustworthy record of the times. In the first, a woman was delivered on the 5th of October, 1736, at a milk-cellar in the Strand, of three boys and two girls at one birth. In the second example, a woman at Wells, in Somersetshire, was put to bed in March, 1739, of four

^{*} The American Journal of the Medical Sciences. Vol. XII., p. 218. Philadelphia, 1833.

⁺ The Port Philip Gazette, 28th August, 1841.

‡ Philosophical Transactions, Vol. LXXVII., p. 344. London, 1787.

The five fectuses are preserved in the Museum of the Royal College of Surgeons. See The Descriptive and Illustrated Catalogue of the Physiological Series of Comparative Anatomy contained in the Museum of the Royal College of Surgeons in London. Vol. V. Products of Generation, p. 177. Loudon, 1840.

sons and a daughter; all of whom, a few hours afterwards, were alive, all christened, and all seeming likely to live.*

Scattered through the various volumes of the periodical just alluded to are at least some half-dozen instances of four infants at a birth, and several more may easily be found in recent journals. † One of the most curious of the cases in the Gentleman's Magazine is the following: -On the 4th of March, 1814, the wife of Mr. James Pickworth, grazier, of Sempringham, Lincolnshire, was delivered of two boys; after which she was so much composed that she got up the next day, and was able to go about until the 6th, when she gave birth to two more boys. Haller conjectured that quadruplets happened once in about 20,000 births; but had he said once in 100,000 the remark would probably have been nearer the truth.

The most extraordinary history of a woman being several times delivered of triplets which I have met with is that related by the Abbé Menage. He says :-" M. D. told me, the day before yesterday, that the wife of a petty shopkeeper in his neighbourhood had borne twenty-one children in seven successive child-bearings. These triplet children had not only been baptized, but had lived, some several days, others several months; twelve of the most robust being alive and grown up. He

^{*} The notes of a case of quintuple birth of living children will also be

The notes of a case of quintuple birth of living children will also be found in the British and Foreign Medico-Chirurgical Review, Vol. VII., p. 547. London, 1851.—Another is quoted from a Russian journal in the Medical Gazette, Vol. II., p. 93. London, 1828.

† In 1674 a pamphlet was published in London with the following title-page:—"The Fruitful Wonder, or a strange relation from Kingston-upon-Thames, of a woman who, upon Thursday and Friday, the fifth and sixth days of this instant March, 1673-74, was delivered of four children at one birth, viz. three sons and one daughter, all born alive, lusty children, and perfect in every part, which lived twenty-four hours, and then died, all much about the same time; with several other examples of numerous Births from credible Historians, with the Physical and of numerous Births from credible Historians, with the Physical and Astrological Reasons for the same. By J. P., Student in Physic."

added, that as doubts might be entertained whether the husband or the wife contributed the most to produce this kind of prodigy, the man made a further experiment by seducing the servant girl who lived with them. At the end of nine months she likewise was delivered of three male children, who, notwithstanding their mother's youth and delicate health, lived a fortnight or three weeks."*

The Dublin Lying-in Hospital was established in the year 1757, from which time until the end of November, 1854, there were delivered within its walls 169,848 women. These patients gave birth to 172,468 children. Of the women so delivered, 2599 had twins; 34 triplets; and only 1 quadruplets. As regards the sex, it may prove instructive to add, that 89,491 were males, and 82,977 females. Again, of 18,300 women delivered at the British Lying-in Hospital, London, the proportion of twins was one in ninety-one births; while there was not a single case of triplets. Dr. Hamilton of Edinburgh said that he had seen triplets born there five or six times in less than twenty-five years; but it is not improbable that these births are more common in the north than far south of the Tweed. This opinion is confirmed by the fact that of 1475 women delivered under the superintendence of the Edinburgh Maternity Hospital, between May, 1844, and the same month of 1846, 34 had twins, and 3 brought forth triplets. If the student should wish for more extended tables, he will find them in the statistical accounts of Prussia, given by Hoffman. From these it appears that between the years 1826-34, there occurred in Prussia 4,467,031 single births, 52,384 twin births, 659 triplets, and 11 quadruplets. In the same country, in the year

^{*} Menagiana. Tom. I., p. 332. Amsterdam, 1713.

1840, there were 574,293 single births, 6381 twinbirths, 72 triplets, and 1 quartett.

6. Attempts have been made to learn what age is the most prolific. From a careful register kept by Dr. Bland, it would seem that more women between the age of twenty-six and thirty years bear children than at any other period. Thus, of 2102 women who bore children, 85 were from fifteen to twenty years old; 578 from twenty-one to twenty-five; 699 from twenty-six to thirty; 407 from thirty-one to thirty-five; 291 from thirty-six to forty; 36 from forty-one to forty-five; and 6 from forty-six to forty-nine. In the greater number of cases fecundation does not take place until the second or third month after marriage. For example, the population returns of Sweden for twenty years have shown that the month of October is that in which the greatest number of marriages take place, but the one in which the smallest number of conceptions occur; while the greatest number of conceptions are proved to happen in the month of December.* Statistical tables prove that when a mother suckles her children, the ordinary interval between successive births is from twenty to twenty-four months.

According to M. Quetelet, the mean proportion of still-born children in the chief cities of Europe, is one in every twenty-two births; the number being three times greater among illegitimate than among legitimate children.† Throughout the whole of France, in 1850, the still-born to the living births were as 1 to rather

^{*} Traité de Physiologie. Par C. F. Burdach. Traduit de l'Allemand sur la deuxième édition, par A. J. L. Jourdan. Tome V., p. 74. Paris, 1839.

[†] Sur l'Homme, et le Développement de ses Facultés, ou Essai de Physique Sociale. Tome I., p. 121. Paris, 1835.

above 37; whilst in Paris alone the numbers were I to about 124. Probably in Great Britain nearly the same discrepancy exists between the numbers of those infants born dead in the rural districts as compared with those of large manufacturing towns. It is generally allowed that in the United Kingdom 1 child out of every 20 is still-born: but in the Dublin Lying-in Hospital the proportion has been rather more than 1 in 17. Thus, during nearly one hundred years, 172;468 children were born in this institution; of which number 10,259 were dead. Owing to the larger size of the head, males are much more frequently still-born than females; the proportion being about 140 of the former to every 100 of the latter.

The dangers of parturition being greater to male than female children, it will at once be inferred that labours with the former are more frequently attended with difficulties and accidents than with the latter: and this inference is corroborated by statistical facts. From these two propositions a third follows, viz., that of the mothers who perish during parturition, or shortly afterwards from its effects, a much greater proportion have been in labour with male than with female children; the ratio probably being rather more than two to one.

7. From all time men have been curious to learn the sex of the fœtus contained in the uterus; and two aphorisms, attributed to Hippocrates,* have been the cause of much criticism and useless speculation. That physicians and astrologers in former days should not have deemed it a foolish waste of labour to treat of this sub-

[&]quot;'A woman with child, if it be a male, has a good colour; but if a female, she has a bad colour." Aphorism 42, section 5.

"The male foctus is usually seated in the right, and the female in the left side." Aphorism 48, section 5.—The Genuine Works of Hippocrates. Sydenham Society's Edition. Vol. II., pp. 745, 746. London, 1849.

ject, is by no means astonishing; and we can readily believe that such rules as those contained in The Birthe of Mankinde and similar works, were thought by the vulgar to be the fruit of great learning.* But it is certainly remarkable to find that even as late as the year 1834 an esteemed Professor of Midwifery in a German university did not consider it unscientific to discuss at some length the various theories which have been broached respecting the signs by which the sex of the child may be foretold, as well as the means which may be taken by the parents for securing the production of male or female children at pleasure. It seems almost incredible that any educated gentleman out of Bedlam could promulgate the doctrine that in order to obtain sons, the generative act is to be performed when the wind is northerly; yet this is one of M. Venette's seven chief rules on the art of procreating the sexes at will, and his writings were formerly much read in France. Almost equally ridiculous is the idea that the Graafian follicles of the right ovary discharge male ovules, and of the left female; and no less so the advice which flows from this view, that in order to procure fecundation of the former the woman must lie on her right side during coitus, and on her left to impregnate the latter. For my own part I should not have alluded to the matter had I not very recently seen a letter to one of our first

[&]quot;But if ye be desirous to know whether the conception be man or woman, then let a drop of her milke or twaine be milked on a smooth glasse, or a bright knife. Other els on the naile of one of her fingers, and if the milke spread abrode upon it by and by, then it is a woman child: but if the drop of milke continue to stand still upon that the which it is milked on, then is it a signe of a man-child.

[&]quot;Item, if it be a male, then shall the woman with child be well coloured, and light in going, her belly round, bigger toward the right side than the left (for commonly the man childe lyeth in the right side, the woman in the left side) and in the time of her bearing she shall better digest and like her meate."—The Birthe of Mankinde, otherwise named the Woman's Booke, p. 193. London, 1604.

medical publishers, asking him to print a manuscript on this very subject; so that there seems to be a chance of all the old, ridiculous, and perhaps disgusting notions of the ancients being temporarily revived in the present day. To discard all such nonsense, it is only necessary to remember two facts. First-that a man who has had one testicle removed by a surgical operation has afterwards been the father of both male and female children; and consequently the ancient opinion that boys were begot by the secretion of the right testicle, and girls by that of the left, can hardly be true. Secondly-that several years ago a poor woman died in a Maison d'Accouchement in Paris, who had had twelve or thirteen children of both sexes. On examining her body after death, it was found that the uterus was imperfectly formed; the left half of this organ and the left ovary and Fallopian tube being absent.* If any reader, in fear of being deemed ignorant, should still desire to be thought clairvoyant, it will be wise for him to adopt the practice advocated by an ancient author, and predict the opposite to the patient's desires: " Because if it happen to be true (although by chance), what was foretold, they will then conclude me to be knowing, and to have said well; if otherwise (which may be once in twice), the woman and her husband obtaining what they desired, will not take so much notice of it, because one always receives with a good welcome what they desire, though unhoped for."

It is not improbable, although nothing very positive is known, that a difference in the ages of the parents has some influence in regulating the proportion of the sexes

^{*} Dictionnaire de Médecine. Deuxième édition. Tome XIV., p. 369. Paris, 1836.

of their children. The following table* may be taken as indicating the proportion of male births to females, under the conditions mentioned in the first column:—

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Father younger than mother,
                                 1000 males to 1156 females.
Father and mother of equal age, 1000
                                                1055
Father older by 1 to 6 years, 1000
                                        15
                                                       "
               6 to 11 ",
11 to 16 ",
16 to 21 ",
                                 1000
                                       "
                                                 789
  **
                                                      75
                                 1000
                                                 625
  "
                                        11
                                                       "
                                1000 ,,
                                                 625
                                                      77
  27
                21 and upwards 1000
```

In a record of 2000 births by Hofacker, the following were the respective ages of the parents, and the proportion of the sexes produced: Of 568 children engendered by fathers who were younger than their wives, 298 females and 270 males were procreated; of 145, from fathers and mothers of equal ages, there were 75 females and 70 males; of 253, by fathers from one to three years older than their wives, there were 163 females and 190 males; of 466, by fathers from three to six years older than their wives, there were 229 females and 237 males; of 191, by fathers from six to nine years older than their wives, there were 85 females and 106 males; and of 273, by fathers from nine to twelve years older than their wives, there were 112 females and 164 males.

Thus it seems from these observations that the advanced age of the father has a decided influence in occasioning a preponderance of male children. This fact tallies with what we know to be the case; for, as a rule, in Great Britain, the husband is rather older than the wife, and the proportion of births is about 106 males to 100 females. The Messrs. Campbell state that in all countries, except

The Law of Population. By Michael Thomas Sadler, M.P. Vol. II., p. 343. London, 1830.

[†] Introduction to the Study and Practice of Midwifery. By William and Alexander D. Campbell. Second edition, p. 76. Edinburgh, 1843.

among Europeans at the Cape of Good Hope, the male progeny predominate. At the Cape, from 1813 to 1820, there were born of European parents, 6789 females and 6604 males; while among the slave population the returns were 2826 females and 2936 males.

8. In the examination of examples of doubtful pregnancy, but little reliance can usually be placed upon the statements of the patients themselves, especially if any motives exist for their resorting to deception. It is well known that women occasionally feign pregnancy-either for the purpose of extorting money, or to gratify the expectations of a husband, or in order to be fashionable or patriotic. On the authority of Madame de Créquy it may be mentioned, that after the first French Revolution there was a great cry about patriotism, and the need of children for the Republic. Hence, those Parisian ladies who were fortunately enceinte, made the greatest possible display of their condition; while such as were less happily situated, invented a style of dress which should at least give them the reputation of being as they vainly desired to be.

The physician, in the daily practice of his profession, however, will more frequently have to deal with instances of concealed, rather than of simulated, pregnancy. The case of the nun—as mentioned by Fodéré—who sent for a surgeon to cure her of a violent colic, and who continued to deny being with child until the cries of the infant silenced her, is doubtless no exaggeration. Indeed, it has been said that women have not only unfalteringly denied ever having been pregnant, directly after giving birth to a child; but have even drawn so extensively on the credulity of their friends, as to assert that the newly-born infant was

brought to them by the accoucheur in attendance. Hence, in estimating the value to be attached to the remarks of patients, it is necessary to be more sceptical even than the Irish bishop; who, after reading Gulliver's book of travels, deliberately said that he did not believe half of it. But, independently of the notorious fact that single women, who have clandestinely indulged in sexual intercourse, and become impregnated, will resort to every kind of equivocation and falsehood, and will make the most obstinate efforts to deceive, it not very unfrequently happens that the patient herself is really ignorant of her condition. There is, indeed, no doubt that a woman who has incurred the risk may become pregnant without being aware that she has conceived; and not only so, butextraordinary as it may appear-it must be allowed that she may become pregnant in consequence of intercourse without knowing that such intercourse has occurred. Without a doubt such an event is very rare; but the possibility of a woman, habituated to sexual connexion, being impregnated while in deep sleep, under the influence of excessive fatigue, or of narcotics, or of alcoholic drinks, cannot be denied, since indisputable examples of its occurrence are recorded. Somewhat allied to these exceptional occurrences are those instances in which women have been delivered during natural sleep, without any knowledge of the circumstance; examples of which are to be found in most works on medical jurisprudence.*

^{*} The following well-marked case may be quoted:-M. Schultze was rate following weil-marked case may be quoted:—M. Schultze was called on the 25th of May, 1844, to attend the wife of an artisan who had reached the full term of her fourth pregnancy. He found her lying in a state of profound somnoleney; so that it was quite impossible to rouse her, either by a violent shaking, or by applying the most powerful stimulants to the nostrils. On the third day of this unnatural sleep, the woman, without awaking, was delivered of a healthy, living, well-formed child. On visit-

Much more marvellous are those cases where virgins are said to have been impregnated without their knowledge. It was formerly the law that when, in a charge of rape, pregnancy was found to have ensued, the occurrence of this state should be deemed as proving that the woman had consented; it being held that fecundation could not take place without the woman sharing in the enjoyment of the man during coition. Gooch, however, very truly remarks, that it is not necessary the woman should be sensible at the time of impregnation, and he subjoins the following narrative in proof of his assertion :- A maid at an inn, who was always thought to be virtuous, and bore a good character, began to enlarge in a way which excited suspicions of pregnancy. She solemuly declared that she had never had connexion with any man. At length she was delivered, and was afterwards taken before a magistrate to swear to the father; but she repeated her former declaration. Not long afterwards, a post-boy related the following circumstance :- He said that one night he came to this inn, put his horses in the stable, and went into the house. He there found that all had gone to bed except this girl, who was lying asleep on the hearth-rug, and without waking her he found means to gratify his desires. Mr. Cusack communicated to Dr. Montgomery the following particulars of a somewhat similar case, which occurred under his own observation :- A female servant at an hotel in Nenagh, proving pregnant, solemnly declared that she was not conscious of having had intercourse

ing her the following morning, M. Schultze found that she had just previously awakened spontaneously from her sleep; and as she had no recollection of being delivered, she was of course much astonished to find the child by her side.—Annales d'HygiènePublique et de Médecine Légale. Tome 33, p. 216. Paris, 1845.

with any man. Suspicion, however, fell upon an ostler in the establishment, who subsequently acknowledged that he believed himself to be the father of the child. He stated that having found the woman in a deep sleep from great fatigue, he had connexion with her; and, as he believed, totally without her knowledge, as she neither evinced consciousness of the act at the time, nor recollection of its occurrence afterwards. The parties were married by mutual consent. Not many years since it was the opinion of physiologists that the only active portion of the seminal fluid was its volatile odour, the grosser particles being merely of use as a vehicle for this aura seminalis. On this hypothesis, the foregoing cases would have been easily explained; and it is strange that the first one has not been added to the histories of what Gardien terms those "marvellous phenomena," where women are said to have become impregnated by the mere application of the male secretion to the external parts of the vaginal labia.

But allowing that impregnation may occur, under very peculiar circumstances, without a woman's knowledge, is it possible that she can continue ignorant of her pregnancy until the child is brought forth? Hebenstreit, writing one hundred years ago, answered this question in the affirmative; for he asserts that a female might be impregnated while intoxicated, could go to the full period without knowing she was pregnant, and might mistake her labour pains for an attack of colic or dysmenorrhæa. Here it will be observed the combination of three most improbable conditions is required -viz., impregnation without consciousness, the imitation of disease by the gradually enlarging gravid uterus, and the mistaking of labour pains for an attack of colic. Surely it must be conceded that if such an occurrence

is barely within the bounds of possibility, yet to say the least very strong moral evidence would be requisite to make it credible in any particular instance.

The presence or absence of the hymen proves nothing with regard to pregnancy, for it can be ruptured by other causes than sexual intercourse, while it may remain perfect in spite of connexion. Still it must be allowed that although the presence of this crescentic reduplication of the vaginal mucous membrane is not a reliable sign of chastity, yet the presence of a delicate and complete hymen renders it very probable that the woman in whom it exists is a virgin. When this membrane is found intact in a pregnant woman, it will generally, but certainly not always, happen that impregnation has been the result of one coitus; and hence it is much more frequently met with in girls who are the victims of the seducer than in married women.*

Women sometimes imagine themselves to be with child when they are not so; such a mistake being most commonly made about the time of "the change of life." Although this subject will be found more fully treated of in the third chapter of this treatise, yet a few remarks in the present section will hardly be deemed out of place. It may be shortly said, then, that in such instances the error is fostered chiefly by the following circumstances: the catamenia become irregular, or they entirely cease; the breasts enlarge; there is often

^{*} The reader should refer to a few notes of cases where the vagina has been found, at the time of labour, almost completely closed by the hymen, or by an adventitious membrane, extending between the labia, in A Synopsis of various kinds of difficult Parturition. By Samuel Merriman, M.D. Third Edition, p. 216 to 222. London. 1820. Some remarkable examples of the same kind are also related by Mauriceau, Gardien, Baudelocque, Meigs, and many other authors; and further on, one will be quoted which happened in the practice of Professor Rossi.

nausea and vomiting; the abdomen grows full and prominent from the deposition of fat in the integuments and in the omentum, as well as from flatulent distension of the intestines; the appearance of a tumour is produced by excessive action of the diaphragm and abdominal muscles; while the movements of a fœtus are simulated by the rapid passage of flatus from one portion of the intestine to another. Occasionally the self-deception is carried so far, that at the end of the supposed gestation, spurious pains, imitative of labour, set in, and the patient is often both incredulous and indignant when told that she is not pregnant. I remember a case which occurred in my own practice, a few years since, and which may be mentioned as corroborative of these remarks. Having been previously engaged to attend a lady forty-two years of age in her second labour, I received a message one evening that my assistance was required immediately, as the pains had commenced. On visiting the patient, I found the nurse busily engaged in airing the infant's clothes, and in assuming all the bustling importance of a person in authority; while the expectant mother was walking about the room, and complaining of her sufferings. On making a vaginal examination, however, I found to my great surprise that the uterus was only of the normal size in its unimpregnated state, with a long cervix, and the mouth and lips small and healthy; and on pursuing my investigations, it became clear that she was not even pregnant, but had been deceived by the natural, though early, cessation of the catamenia, by an excessive increase in the adipose tissue of the abdominal walls, and by an abundant secretion of flatus in the intestines. I was, of course, prepared to find my explanations of her condition laughed at as impossible; for it is not to be expected that when a woman has been dwelling exclusively upon one idea for many weeks, she will cast it aside just at the moment she believes her anticipations are about to be realized. It is due, however, to my patient to add, that she did not maintain her delusion very long; since she listened to a simple statement of the facts, and was apparently convinced of her mistake by the end of twenty-four hours. Ladies are not by any means always as sensible, for Dr. Montgomery states* that he has known them remain perfectly persuaded of their pregnancy for one, two, and three years; and, in one instance, both the lady and her physician assured this gentleman that the movements of the child had been distinctly felt for nine years.

9. The function of reproduction, as it is effected in the various classes of animals, is one of the most interesting subjects to which the attention of the physiological student can be directed. A superficial examination of the matter shows that there are three modes in which this function is performed:—1. Fissiparous Multiplication, or that in which propagation is effected by the division of the parent body into pieces, each of which becomes an independent individual; this process being common amongst the Infusoria, and in some of the Cestoidea and Annelida. 2. Multiplication by gemmation, in which the offspring arise by buds, like the parts of a tree, as is seen in Vorticellæ and Polyps;* and 3. True generation, consisting in the union of the

* An Exposition of the Signs and Symptoms of Pregnancy, &c. By W. F. Montgomery, M.D. Second Edition, p. 394. London, 1856.

+ Animals which propagate by self-splitting or self-dividing, or by bud-

⁺ Animals which propagate by self-splitting or self-dividing, or by budding from without or within, are often spoken of as parthenogenetic individuals. The term is derived from $\pi \alpha \rho \theta \epsilon \nu \sigma$, a virgin, and $\gamma i \gamma \nu \rho \mu \alpha \iota$, to be born.

contents of two different cells, called respectively the "sperm cell" and the "germ cell." The sperm cell is secreted by the male organs, and the germ cell by the female; and these male and female organs may exist in one individual or in separate individuals. The first condition is known as unisexual, and the second as bisexual generation. In some unisexual, or hermaphrodite animals, self-impregnation takes place, as is the case in the tænia solium; while in other instances concourse is necessary, in order that the ova should be exposed to the action of the spermatic fluid, as happens with many of the mollusca like the common snail. In these last instances each hermaphrodite animal impregnates its neighbour.

Among the placental mammalia the generative organs resemble those of the human subject. the male we have the bundles of seminiferous tubules enclosed in a fibrous capsule, and constituting the testicle, together with the efferent duct; with the penis and certain accessory glandular structures. On the part of the female, there is the ovary with its Graafian follicles or ovisacs, in which the ova are developed and prepared for fecundation; together with the parovarium or remains of the Wolffian body, the Fallopian tube or oviduct, the uterus, and vagina. Each ovum or ovule—as it is better to term it, to distinguish it from the fecundated ovum-is invested with a homogeneous tissue, called the zona pellucida, or vitelline or yolk membrane, within which is the yolk. with its germinal vesicle containing the germinal spot. The ovule is about the 10th, and the germinal spot about the that of an inch in diameter. The spermatic filament or spermatozoon of man is about the of an inch long, and about 1 th of an inch wide at the head. It is now regarded in the light of an epithelial cell-or rather as its nucleus — modified in structure, and endowed with peculiar properties. The originally received notion of its animal nature is placed without the bounds of speculation. The movements of the spermatozoa continue longer in the interior of the female organs of generation than in any other situation. The researches of Mr. Newport on the ova of the frog, prove that impregnation does not take place unless the spermatozoon actually passes through the vitelline membrane, and comes into immediate contact with the yolk substance.

The exact nature of the influence communicated by the spermatozoa to the ovule is an enigma which is not likely to be solved. Philosophers, however, are chary of confessing their fallibility; and hence many and strange are the opinions which have been put forward as a cloak for ignorance. Yet the errors which seem unavoidably to belong to the early stage of almost all scientific investigation may-if rightly studiedserve for something more than mere amusement. Just as the search by the alchemists for means whereby they might transmute the baser metals into gold has been productive of some most important and varied chemical facts, so inquiries into the inexplicable ultimate cause of all vital functions has at least increased our knowledge of the various processes of the phenomena of life. Drelincourt, in his Opuscula Medica, published in 1727. prefaced his theory of generation by showing that two hundred and sixty-two groundless hypotheses had already been proposed; and as Blumenbach naïvely remarks-"Nothing is more certain than that Drelincourt's own theory formed the two hundred and sixty-third." Some of these conceits are perhaps sufficiently extraordinary to demand a passing notice. Thus, Pythagoras thought that a vapour descended during coition from the brain

and nerves of the male, from which these parts were formed in the embryo: the grosser tissues being composed of the blood and humours contained in the He considered also that the fœtus was formed in forty days; but that seven, nine, or ten months were required for its perfection. Empedocles imagined that some portions of the embryo were contained in the semen of the male, and others in that of the female; the child being formed by the union of the two. The opinion of Hippocrates also was that conception took place in the uterus by the mixture of due proportions of the male and female semen, in which the organic principles of the embryo were equally contained; the sex of the offspring depending upon whether the male secretion was more powerful than the female's, or vice versd. Aristotle taught that the material parts of the embryo were formed by the catamenial blood, and that the male semen imparted the principle of life when the body was formed. Making a long stride over many centuries, we find Descartes and his followers believing that when the male and female seminal fluids were mingled, a fermentation took place, and a fœtus was formed: while the experimenters in chemistry would have it that the male secretion being acid, and that of the female alkaline, a double decomposition took place on their mingling, so that a fœtus was precipitated. Then, lastly, we have Ludwig Hamm, in 1667, and a few months subsequently Leeuwenhoek, asserting that an immense number of animalculæ exist in the semen of all male animals, and that they contain the perfect rudiments of a future animal, each of its own kind; and that these animalculæ merely require from the female a proper nidus or habitation, and suitable nourishment. The discovery of the movements of the minute seminal particles seemed

to confirm this theory; and some writers even held that these supposed animalcules were of different sexes, and that they copulated so as to engender male and

female offspring.

Leaving these fancies of a bygone age, I would add a few words upon the immediate signs by which many obstetricians of the present day consider it may be inferred that a woman has conceived. Although undeserving of much attention, the phenomena which have been relied upon for centuries are as follows:-A sense of greater voluptuousness, a more general erethism is experienced during the fruitful coition by both parties, but especially by the female; the seminal fluid is retained, and does not pass out of the vaginal orifice; a slight rigor, or spasm, or feeling of contraction, is excited, followed by an indescribable pleasure, which is again succeeded by a sense of languor and depression; a sensation like colic is felt in the umbilical region, with pain in the pelvic and lumbar regions: and a feeling as of congestion and slight weight in the uterus occurs, with a tendency to nausea. In a day or two there may be neuralgic tenderness of the cutaneous surface of the abdomen, with a variable amount of tumefaction; a general excitement of the vascular system, with a disposition to feverishness; the eyes become more sunken and languishing, their brightness diminishes, and a bluish circle appears round the orbits; and there is often a peculiar softness and triffing lividity of the features. One author, M. Mangars, has said that it is a sign of conception when the seminal odour is appreciable to the taste; but some foreign writers seem to take a pleasure in suggesting anything that is grossly extravagant.

10. When a woman has become pregnant, she

should be treated with watchful solicitude and tenderness by those immediately around her, and more particularly so the nearer the time of her suffering draws nigh. In all ages the state of utero-gestation has secured certain privileges to the female. Paris and Fonblanque remind us that the Athenians spared the murderer who took refuge in her dwelling. ancient kings of Persia presented pieces of gold to every woman in this condition. In Egypt, the woman condemned to die was never executed till after her delivery; and even the Jews relaxed the rigid commandments of the Mosaic law, and allowed prohibited viands to the pregnant female, whose fastidious appetite might make them articles of desire. It is undeniable that pregnancy increases the general susceptibility. alters the disposition, and may give rise to a weak selfindulgence in wayward and capricious fancies; whilst the most amiable often are rendered by it extremely irritable, particularly under any attempt at control or contradiction. In many, also, the anticipation of the pains and dangers of labour is the cause of much mental uneasiness, or even of depressing despondency. The respectful deference which is commonly shown to women in civilized countries at all times, is now therefore more especially demanded; while a little forbearance and persuasion will do much more than rudeness or the least harshness in making the future mother conceal any infirmity of temper, as well as in enabling her to assume a calm and cheerful deportment.

These remarks will possibly be deemed unnecessary by some of my readers; but it seems to me that, in these days of progress, when a small minority are persuading women to follow occupations for which Nature never intended them, it is advisable to repeat home truths. No doubt pregnancy and parturition

are perfectly natural conditions, and certainly very many individuals can be found who are able to go through both with almost as much ease as the women of rude and savage nations are supposed to have formerly done. We know that many barbarous customs were prevalent in days long gone by, but we cannot learn to what extent the victims of these habits died. Thus Bruce, in describing the inhabitants of Galla, in Abyssinia, curtly observes that-"The women are said to be very fruitful. They do not confine themselves even a day after labour, but wash and return to their work immediately. They plough, sow, and reap."* Still more extraordinary stories are told by ancient travellers. Diodorus, the Sicilian-the contemporary of Cæsar and Augustus, who travelled over a great part of Europe and Asia before writing his Universal History—speaking of the Corsicans, tells us: "A very strange thing there is among them concerning the birth of their children. When the woman is in labour, no care is taken of her in the time of her travail; but the husband goes to bed, as if he were sick, and there continues for certain days, as if he were suffering the pains of a woman in travail." + So also Strabo relates of the Iberian women, that "they till the ground, and after parturition, having put their husbands instead of themselves to bed, they wait upon them." And if we are to believe the statement of the late Bishop of Norwich, these manners are not quite extinct; for he writes that-" In Kardon, the

p. 468. Edinburgh, 1790. + Diodori Siculi, Bibliotheca Historica. Liber V., cap. 5, p. 139. Basilese, 1578.

^{*} Travels to Discover the Source of the Nile. By James Bruce. Vol. IV.

[†] The Geography of Strabo. Book III., chap. 4. Bohn's Edition, Vol. I., p. 247. London, 1854.

province of Tartary, as soon as a woman is delivered, she rises and dresses the child; then the husband, getting into bed with the infant, keeps it there forty days, and receives visits as if he had laid in."*

Now it may be well supposed that no change of fashion can ever introduce these manners into any part of Europe, though it is not as certain that we shall not draw false conclusions from reasoning upon them. As I before remarked, we have no means of learning what proportion of women formerly died in childbirth, but we happily can tell that, as our knowledge of physiology and pathology has increased in modern times, so the mortality of parturition has certainly, in this country at least, lessened. Not to weary the reader with long proofs of this, + it will suffice to mention that the Twentieth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England contains a valuable letter from Dr. Farr, on the causes of death in the year 1857; in which it is shown that the mortality during childbirth in England and Wales is steadily diminishing. For instance, in the year 1847, the birth of every 10,000 living children was the death of 60 mothers, whereas in 1857 it was only fatal to 42; hence 18 mothers are now saved in every 10,000 children born. Since 1848 the decline has been progressive, the numbers per 10,000 being 61, 58, 55, 53, 52, 50, 47, 47, 44, and 42 in 1857; in which year 663,071 children were born alive. That this happy result is not accidental, but is in a great

* Aphorisms and Opinions of Dr. George Horne, late Lord Bishop of

Norwich, p. 27. London, 1857.

† The reader may be particularly referred to a table showing the average number of deaths in childbed in London, from the year 1660 to 1819, contained in Dr. Merriman's Symposis of the Various Kinds of Difficult Parturition, &c. Third Edition, p. 323. London, 1820.

measure due to the progress of science, cannot be doubted; and it may well encourage the practitioners of obstetric medicine to redouble their exertions. That increased exertions will be made cannot be doubted: for they are urgently demanded by the fact that we must still calculate that at least 3000 women in the prime of life perish annually in England and Wales from childbirth. Now, to diminish this mortality should be a serious subject of reflection with us all; and I cannot but believe that one step may be taken in this direction by paying greater attention to the health of women during the whole period of pregnancy. On two points I entertain a very positive opinion, the fruit of much consideration and no small amount of actual experience. First, that no progress will be made by substituting the attendance during pregnancy and parturition of even properly educated midwives for physicians and surgeons, unless that judgment, courage, power of endurance, and capacity for acting well and promptly on an emergency, which distinguish the one sex, can be given to the other. And secondly, that it will prove a retrograde step to attempt to harden the system in pregnant and parturient women, or to treat them with less watchful care than they now generally experience. It has been sometimes erroneously thought that because the parturient process in domesticated animals is easy or difficult, in proportion as they are subjected to a life of toil, so a similar law must apply to the human subject. But the experience of every obstetrician who has practised both in St. Giles's and in St. James's will rebut this opinion. The cow in the country farm, living unfettered in the meadow until the day of calving, has in general a safe and easy labour; while the poor beast which is kept in a town dairy has a time so incredibly dangerous, that the proprietor generally

sells off his stock every year, and replaces it with cows in calf, which are not put into the stalls till within six or eight days of the expected period of parturition. The correct deduction from this is, that an artificial mode of life-a life maintained by improper food, and without a sufficient supply of pure air, or a due amount of exercise—has a most deleterious influence upon the process of labour; and not that a toilsome existence, embittered with all the pains and anxieties of poverty, gives comparative immunity from danger in the hour of parturition. The best step that can be taken, in addition to those already recommended, to render the time of pregnancy and parturition in women less dangerous than it is now, is to lay the foundation of a sound and vigorous constitution in early life. If the present race of mothers can but be taught to rear and educate their girls in accordance with the simple teachings of science and sound common sense, the future mortality in childbirth will be materially lessened. Instead of being so anxious to provide their children with wealth and to cram them with learning at any cost, let the parents consider how much more important it is to devote some time and attention to securing for each of them a sound and robust constitution; for the words of the son of Sirach are undoubtedly true, that-" Health and good estate of body are above all gold, and a strong body above infinite wealth."

CHAPTER II.

THE SIGNS AND SYMPTOMS OF PREGNANCY.

Section 1. The classifications which are usually adopted:—a table of the symptoms and signs of pregnancy.

Section 2. Suppression of the catamenia: - puberty and menstruation.

Section 3. Nausea and vomiting :- diarrhaa and salivation.

Section 4. Mammary sympathies: - the areola, de.

Section 5. Enlargement of the abdomen:—position of the uterus at different periods of pregnancy.

Section 6. Movements of the fætus :- quickening and its causes.

Section 7. Changes in the uterus:—dimensions of this organ at the various months.

Section 8. Ballottement or repercussion.

Section 9. Signs derived from auscultation:—the fatal movements:—the funic pulsations and funic souffle:—the uterine souffle:—the fatal heart.

Section 10. Minor signs:—Kiestein:—contractile power of the gravid uterus:—discoloration of vagina:—examination of the blood:—the vaginal mucus:—shape of the os uteri:—vaginal pulse:—occipital headache:—certain physical and moral changes.

Section 1.—Classification of the Signs of Pregnancy.

The division of the signs of pregnancy into classes would appear to have been a favourite custom with most authors. In France the almost universal subdivisions seem to be into the rational and the sensible signs: the first including those characters usually pointed out as existing in the earliest periods, such as the suppression of the menses, the enlargement of the abdomen, the darkening of the arcola, the functional disturbances in the digestive organs, the modifications in the urine, and the changes in the general habits as well as in the moral and intellectual faculties; while in the second category we find those signs which are derived from the

practice of the touch, or of auscultation. In Germany some of the most esteemed writers speak first of those signs which are to be detected only by a physical examination; and secondly, of such as result from the derangements of particular functions. The authorities of Great Britain are wanting in unanimity as to a system of classification, and each teacher seems to put forward a different scheme. Thus, Dr. Evory Kennedy speaks of (1.) those signs ascertained through the representations of the individual supposed to be pregnant,-such as the pelvic and lumbar pains, morning sickness, menstrual suppression, mammary pains, vitiated tastes, &c.; (2.) the evidences which are tangible to the practitioner, - particularly the state of the hymen, the changes in the os uteri, ballottement, and the condition of the abdomen; (3.) the visible evidences,—as the appearance of the areola, the emergence of the umbilicus, the discolorations of the skin, the swelling of the limbs, and the varicose state of the veins; and (4.) the audible evidences,-or those which are detected by mediate or immediate auscultation. Dr. Montgomery classes the signs into three groups,the presumptive, the probable, and the unequivocal. Many of the sympathies included in the first class may arise from uterine irritation equally with pregnancy, since they consist chiefly of constitutional affections; in the second class are included the symptoms which are due to the altered condition of the uterus itself, which, increasing in size, ceases to be a pelvic organ, and rises into the abdomen; while, under the head of unequivocal symptoms, are placed those which are produced by the movements of the fœtus, as well as the signs derived from the practice of auscultation. Dr. Rigby considers (1.) the general effects which pregnancy produces upon the system; and (2.) the changes and phenomena which are peculiar to this state, and

which may therefore be taken as so many means of diagnosis. Dr. Blundell treats of those which are of ordinary occurrence, those which are rare or anomalous, and those which are common to all women, but which can be ascertained solely by means of a careful manual examination. Dr. Churchill groups together the early evidences of pregnancy, and afterwards the indications of more advanced gestation. Not to push this uninteresting inquiry further, I shall content myself by remarking, that no classification can be proposed with which some fault cannot readily be found; and that even if a perfect subdivision could be laid down, it seems to me that it would be useless. In the daily practice of the obstetrical portion of his profession, the physician must have his knowledge so arranged in his mind-so, in every sense of the phrase, at his fingers' ends-that he can immediately apply it to the particular case before him; and this will be best accomplished by each one making himself fully acquainted with the subject in all its bearings, and then, if he should find it necessary, forming such divisions and subdivisions as the bent of his own judgment will readily suggest.

A very remarkable and progressive increase in the vital actions of the generative system is manifested almost immediately after a woman has conceived. This is shown chiefly in the uterus; but also, to a lesser extent, in the metamorphosis of the Graafian follicle, or ovisac, which has discharged the ovule, into a true corpus luteum, as well as in the congestion and tenderness of the mammæ which ensue. The uterus not only acquires a principle of growth; but its walls are rendered very vascular; while the tissue of this organ gets infiltrated with serum, and the mucous membrane becomes greatly thickened. In time, as the womb gradually expands and slowly rises out of the pelvic

cavity, it disturbs the relations of the abdominal viscera. The bladder-being supplied, like the uterus, with nerves from the hypogastric and sacral plexuses-first suffers, becoming irritable, so that a frequent troublesome desire to micturate is manifested: while in the latter stages great inconvenience is sometimes experienced from an inability to retain the urine, which comes away involuntarily on coughing, laughing, or even When the uterus has acquired considerable size, it begins to interfere with the circulation, and particularly with that through the veins; producing anasarca of the feet and legs, by its pressure on the venous trunks which return the blood from the lower extremities. In the same way, varicose veins and troublesome piles are produced; though the latter may likewise be due to congestion of the hemorrhoidal veins from constipation. So, also, from the pressure on the pelvic nerves, numbness and cramps are experienced in the thighs and legs; and occasionally even paralysis results from this cause. When the uterus has acquired its full growth, it occupies a large space in the abdomen; while by pressing the liver and stomach against the diaphragm, it diminishes the capacity of the chest, impedes the action of the lungs, and produces a greater or less amount of dyspnæa. Sometimes the pressure of the uterus against the abdominal parietes causes a separation between the recti muscles-perhaps to the extent of two or three inches; the umbilical ring also is likely to become dilated, leaving a predisposition to hernia at this part; and not uncommonly pain is complained of on either side, just below the false ribs, owing to the dragging of the abdominal muscles at their insertions.

In addition to these mechanical effects, the new action in the uterus induces certain changes which are to be regarded as symptoms of pregnancy; such as suppression of the menses, disturbance of the digestive organs, increased irritability of the nervous system, peculiar alterations in the tastes and disposition, neuralgic pains, increase in size of the breasts with formation of areolæ, alterations in the countenance either from an increase in the adipose tissue or from absorption of the fat, a change in the colour of the vaginal mucous membrane, and pulsations in the arteries of the lower part of the uterus. The only certain signs of pregnancy are, the detection of the active movements of the child, positively feeling the presence of the fœtus in utero by ballottement, or hearing the pulsations of the fœtal heart.

Before advancing to the consideration of the symptoms and signs of pregnancy seriatim, it may facilitate their study to glance at the chief of them as they are arranged in the following tabular form:—

A TABLE OF THE SYMPTOMS AND SIGNS OF PREGNANCY.

	Morning Sickness.	Suppression of the Menses,	Mammary Areola.	Enlargement of Abdomen.	Feetal Movements.	Shortening of Cervix.	Ballottement.	Uterine Souffle.	Fætal Heart.	Dusky hue of Vagina.
End of First Month ,, Second ,, ,, Third ,, ,, Fourth ,, ,, Fifth ,, ,, Sixth ,, ,, Seventh ,, Eighth ,, ,, Ninth ,,	+++=:::::::::::::::::::::::::::::::::::	+++++++	: ++++++	:: : 9 + + + + + +	:::::::::::::::::::::::::::::::::::::::		: ; ; + + + + * *	.:: 9 + + + + +		:: ? + + + + + +

This table reads thus:—At the end of the third calendar month the symptoms and signs of pregnancy are, morning sickness, suppression of the menses, the development of the mammary arcola, perhaps enlarge-

ment of the abdomen, possibly the uterine souffle, and may be a dusky hue of the vagina. Again, at the end of the eighth month we find suppression of the menses, increased development of the areola, enlargement of the abdomen, fœtal movements, perhaps ballottement, the uterine souffle, the fœtal heart, and a dusky hue of the vagina.

SECTION 2.—SUPPRESSION OF THE MENSES.

Before proceeding to speak of the value to be attached to this symptom, a few observations on the accession of puberty in the male and female will hardly be deemed out of place; first premising that the time of puberty is not to be confounded with the epoch of the perfect development of the organization, which is attained by men at about twenty-five, and by women, perhaps, at twenty-two years of age.

In the male puberty occurs about the sixteenth year; and is marked by an increase in the tone of voice, by augmented development and symmetry of the limbs, by the growth of hair on the face and pubes, by a greater development of the genital organs, and by the formation of perfectly formed spermatozoa in the testes.

In the human female the accession of puberty at about the fifteenth year is characterized by an exaltation of the mental powers, by an increased development of the body generally, by enlargement of the breasts, by the growth of hair upon the mons veneris, and especially by the appearance of the menses or catamenia—καταμηνιος, monthly. The power of procreation continues in women for about thirty or thirty-five years, viz., from the time of puberty until the decline of menstruation—"the change of life,"—at about forty-five to

forty-eight or fifty years of age. During this time they suffer from a sanguineous discharge—the catamenia, menses, or courses-every lunar month, except during the periods of lactation and pregnancy; the catamenia appearing every twenty-eight days, counting from the beginning of one period to the commencement of the next, and as each period lasts, on an average, four days, the interval is of course about twenty-four days. tropical climates the menses appear about two years earlier than in this country; and about one year later in cold northerly latitudes. Puberty, also, in both sexes, is hastened by luxurious and indolent habits, by high living, and, perhaps, by residence in large towns. It is probable that in at least two cases out of every three, primary menstruation is unattended with any pain; and it is certain that, as a rule, strong and healthy women menstruate more sparingly than anæmic or strumous girls, many females with a tendency to tuberculosis having a copious watery catamenial flow for eight or ten days.

The menstrual fluid consists of pure blood, which becomes mixed with mucous and epithelial cells in its flow through the cervix uteri and vagina. It is of alkaline reaction in the uterus; and if, owing to contraction of the os, it be retained in the uterine cavity, it coagulates, and is expelled in the form of small clots. When it becomes mingled with these cretions of the vagina, however, it is rendered acid; and it is this acidity which prevents the menstrual blood from coagulating, and not, as was erroneously supposed, an absence or diminution of fibrine. The quantity of the menstrual discharge at each period varies; but it may be stated that from four to six ounces is the average.* The source of the flow

^{*} A great variety of opinion has existed upon this point. Hippocrates thought that the Greek women lost twenty ounces at each period; Galen

is chiefly the mucous membrane of the body of the uterus; and perhaps, in a less degree, the lining membrane of the Fallopian tubes. It is now a recognised fact in physiology, that during menstruation-as during the rut or heat of animals-Graafian vesicles are ruptured, and ovules discharged.* In the human female the ovule is supposed to escape towards the termination of the catamenial flow; and sometimes one, or even more, may be discharged from each ovary. The time occupied by the descent of the ovule through the Fallopian tube and uterus is possibly eight or ten days, though nothing positive can be said on this head; during which passage it either perishes if no fruitful sexual intercourse takes place, or, on the contrary, it becomes impregnated by the nuclei of the sperm cells -spermatic filaments or spermatozoa-of the male, and so gives rise to the formation of the embryo. Arguing from analogy, it seems probable that the material contact of the male and female generative

* Mr. Roberton has pointed out the curious circumstance that the Hindu lawgivers have long since acted upon this notion; for it is enjoined in the Hindu Shastras, that females be given in marriage before their first menstrual discharge, and that should marriage not take place until after this event, then the ceremony is regarded in a sinful light.
Moreover, Atri and Kasyapa (Hindu sages) state, "that if an unmarried
girl discharges the menstrual fluid at her father's house, the father incurs a guilt similar to that of destroying a feetus, and the daughter becomes Brisalee, or degraded in rank,"

supposed it to be eighteen ounces in the Romans : Haller says it varies from eight to twelve ounces for German women : Du Hahn found, as the result of many careful experiments, that some women evacuated three ounces, others four or five, and very few ten ounces, unless the uterus was diseased: Baudelocque estimates it as three or four ounces for the French, though Magendie thinks it is often much greater: Fitzgerald regards it as amounting to fourteen or fifteen ounces in Spanish women : and in Holland, according to Gorter, the discharge does not exceed six ounces. Dr. Meigs states that he is confident that many healthy American women lose fully twenty-one ounces as the regular and normal elimination: while in England authorities calculate that it varies from three to ten ounces, though-as stated in the text-from four to six ounces is probably the

elements takes place in the Fallopian tube or oviduct; various experiments upon mammalian animals leading to the conclusion that this is generally the seat of impregnation. The researches of Mr. Newport on the ova of the frog confirm the opinion put forward by Dr. Martin Barry in 1843, that impregnation does not take place unless the spermatozoa actually pass through the zona pellucida, or bounding membrane of the ovule. and come into immediate contact with the germ mass, in which they become liquefied. What is the nature of the force communicated by the spermatozoon to the germinal vesicle or germ cell of the ovule we cannot tell; all that we know is, that those marvellous changes in the ovule which lead to its conversion into the ovum and the development of life, cannot take place without its agency.

To return from this digression, it may be remarked that the suppression of the menses is generally the earliest symptom of pregnancy; which, from its almost uniform occurrence, is constantly used by women as the test of conception, and also as affording the best means of calculating the date of parturition. much confidence, however, must not be placed upon this symptom; for many circumstances tend to render it inconclusive. Thus, the catamenia may recur regularly for three or four months after conception, and cases are even recorded where they have continued to appear at natural intervals throughout the whole period of utero-gestation; in these last instances the menstrual discharge probably taking place from the vessels distributed about the vagina and external surface of the cervix uteri. "A woman," says Dr. Blundell, "supposing herself to be pregnant, asks whether gestation is possible; for, it is added, the system is still regular. To such a query the answer is, that it is not

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only possible, but probable; for-notwithstanding what Denman has said to the contrary-I have myself known women in whom, during the first three or four months, the catamenia have continued to flow, though not in so large a quantity, nor so long, as if they were not pregnant; and in rare cases, I am told-though I have not seen any such case myself-the catamenia may continue to flow up to the very last month."* more curious still are the cases where menstruation comes on for the first time after conception; as well as those very rare instances in which women menstruate only during pregnancy, and at no other period. Deventer has recorded a case in which he had the opportunity of observing the occurrence of menstruation during the time of gestation only, in the four successive pregnancies of the same woman.

It has been observed since the time of Aristotleand the circumstance has been confirmed by many modern authors-that pregnancy may take place without the previous occurrence of any catamenial discharge, as well as after the total cessation of the menses. The explanation of these facts seems to be this-that the capital phenomenon in the function of menstruation consists in the maturation and periodical discharge of the ovules, the hæmorrhage being but a secondary phenomenon. The practitioner will, however, be liable to be misled, if he concludes that because a patient states that she menstruates regularly, that therefore she really does so. Every woman who has a periodical discharge of blood from the vagina during pregnancy will attribute it to "her courses;" though the bleeding may be due to a polypus hanging from the cervix uteri into the vagina,

^{*} The Principles and Practice of Obstetric Medicine, p. 1053. London, 1840.

or even—as in an instance which came under my own observation—to a mass of epithelial cancer. The irregular hæmorrhages which occur during the latter portion of gestation from placental presentation, have also been mistaken for the catamenial secretion. There can be no doubt, also, that in some cases the discharge is due to inflammation and excoriation of the cervix uteri; the excoriated surface bleeding freely on being touched, or on the uterus becoming more than usually congested by the pressure of a loaded rectum, &c. These cases are very important, not merely in a physiological point of view, but really as regards the patient's welfare; for if the diseases to which I have alluded are allowed to go on unchecked by art, abortion is very likely to be the result.

From the foregoing it seems to me, that if we take a certain number of the cases in which menstruation is reputed to take place regularly during pregnancy, and subtract those in which there is merely hæmorrhage from some morbid condition of the uterus, we shall reduce the number very materially. Granting this, then, the question arises, how are the real cases of menstruation during the first three or four months of gestation to be accounted for? The explanation of this point has been for many years a stumbling-block to physiologists; for so long as the decidua was regarded as a distinct exudation from the mucous membrane of the uterus, the occurrence of menstruation after the formation of this membrane seemed impossible. Until the last few years the opinion has always been, that the earliest effect of successful impregnation was the formation of a new membrane in the cavity of the uterus; which membrane (the decidua) closed the os uteri and the orifices of the Fallopian tubes. As the fecundated ovum descended, it pushed before it that

portion of the decidua which was placed over the uterine extremity of the Fallopian tube; and so entered the uterine cavity, covered really with two lavers of decidua. The layer of this membrane lining the uterus was called the decidua vera; while that part pushed forward by the ovum, and closely enveloping it, was termed the decidua reflexa. These hypotheses are now scattered to the winds, by the simple discovery that the decidua is not a new tissue, but merely the congested and swollen uterine mucous membrane; so that the orifices of the Fallopian tubes and cervix are not closed. When the fecundated ovum, propelled by the vermicular action of the Fallopian tube, enters the cavity of the uterus with its hypertrophied membrane, it is probably about the size of a pea, and hence its progress is soon arrested. It then either takes root, as it were, and becomes embedded in a fold of decidua which closes around it, forming the decidua reflexa; or more probably the ovum drops into one of the openings leading to the utricular follicles, and there forms the decidua reflexa, by drawing around it-as suggested by Bischoff, Farre, and Otto Funke-the soft and spongy decidua constituting the walls of the orifice. Now it is clear that until the ovum so enlarges as to force the decidua reflexa into close and firm apposition with the decidua vera, there is no mechanical obstacle to the flow of the menstrual blood; and by consequence—as will again be shown in a succeeding chapter-none to the occurrence of superfætation. Dr. J. Matthews Duncan has given a description of a beautiful preparation taken from the body of a pregnant woman, who died from causes quite unconnected with the uterus or its functions. Judging from the development of the fœtus, she had arrived at least at the eighth week of pregnancy. The mucous membrane lining the uterus was seen to be of great

thickness, while that lining the cervix was unchanged. The openings of the cervix uteri and of the Fallopian tube of the left side were easily seen, but that of the right tube had been destroyed in dissection. The decidua reflexa completely covered the ovum, being a thin layer without glands, springing from the decidua vera. The cavity of the uterus was still not closed, there being ample space all around the ovum between the two parts of the decidua, from the os uteri to the tubes.-There are only two remaining points to notice. First, with regard to the time that the decidua reflexa comes into apposition with the decidua vera; on which head it may be said that Dr. J. Matthews Duncan has demonstrated that it is probably some time about the third month. Secondly, physiologists assert that the menses cannot come from the cavity of the uterus during pregnancy, because a plug of viscid cervical mucus acts as an obstacle. To this it need only be replied, that the plug is as dense in the non-menstruating, unimpregnated uterus as in the impregnated; and, since it offers no obstacle in the one case, there is no reason why it should do so in the other.

The menses become suppressed from many other causes than pregnancy. In young newly-married women we not uncommonly find that two or three periods are passed over without any assignable cause; and as, at the same time, the breasts increase in size, and become rather tender, the anxious wife readily, but erroneously, believes that she is "as she would wish to be." Moreover, the catamenia often cease or become irregular from cold, from shocks to the nervous system, and from disease—especially, perhaps, from ovarian affections and incipient phthisis: they may stop at an unusually early age, from some constitutional peculiarity: while, at "the change of life," intermissions of several periods, before final cessation,

are very frequent. Women who are suckling may conceive—especially if they continue nursing for too long a period—without the previous reappearance of the catamenia; and hence instances are met with where, from a rapid succession of pregnancies, menstruation has not occurred for years. It must also be remembered that the discharge of the catamenia may be prevented by adhesions forming between the vaginal labia, or by an imperforate hymen; and as the retained secretion enlarges the uterus, so it gives rise to symptoms which may readily be mistaken. An attempt at a vaginal examination will detect the obstruction; and a division of the membrane will give exit to the collection of fluid, which has been found to amount to two or three pints, or more.

Lastly, there is a source of deception which we cannot easily prevent—viz., a young girl, fearing she is pregnant, and presenting evidence to the eyes of others that she is so, will assert that she is regular, and will carry the deception so far as to stain her linen every month with blood.

SECTION 3 .- NAUSEA AND VOMITING.

It is of course obvious that this sign is not of much value by itself: for nausea and vomiting may be caused by a variety of circumstances independently of pregnancy; while, on the other hand, the whole period of gestation may be passed through without its occurrence. Nevertheless, when a woman has conceived, the stomach frequently becomes very irritable, so that much suffering ensues from the nausea and sickness which results; and as these symptoms are always most

distressing in the early part of the day, they are usually spoken of as "the morning sickness." The sickness, it is to be remembered, is not due to dyspepsia, but to sympathetic gastric irritability; for, as a rule, the patient does not vomit her food undigested, but merely ejects the mucous secretions of the stomach. In exceptional instances, without a doubt, the irritability is so great that the stomach will retain nothing, not even iced water; but of these I am not now speaking. The nausea is sometimes experienced within a day or two of conception, though usually it does not happen until about the end of the fourth week; and it may persist during the whole time of pregnancy, or it may cease spontaneously-as it does in the great majority of cases-about the fourth month. Sometimes the sudden cessation is said to have been the first indication of some unfavourable change in the woman's system, or to have proved the immediate forerunner of abortion; but I can only say that I have never known it do so. The authorities who promulgate this opinion generally assert also that uterogestation proceeds more regularly and favourably when vomiting is present than when it is absent. In instances where the sickness continues during the whole of pregnancy, or when it returns in the latter months, it will generally be found that some uterine disease co-exists with pregnancy; as I shall show in the chapter on the disorders of the digestive organs.

The same sympathetic action which gives rise to the morning sickness sometimes induces loss of appetite, distaste for animal food, longings for unusual articles of diet, as well as a disposition to diarrhæa; and not very uncommonly—as has been noticed since the days of Hippocrates—the salivary glands become affected, inducing copious salivation. The latter is distinguished

from mercurial ptyalism by the absence of sponginess and soreness of the gums, and by the odour of the breath remaining inoffensive. The quantity of saliva which is discharged is sometimes surprising; one case being recorded where three or four quarts were excreted daily.

SECTION 4 .- MAMMARY SYMPATHIES.

When the catamenia have been suppressed for about two periods, the pregnant woman begins to experience a feeling of fulness, tenderness, and throbbing of the breasts; together frequently with a sensation of soreness in the nipples. Sometimes these symptoms set in much earlier. I have recently attended a delicate lady in her confinement, who assured me that, from the end of the first fortnight of pregnancy until the termination, she was seldom free from very great uneasiness in both mammæ; the sensation of weight and throbbing being at times almost unbearable. Generally speaking, however, at the end of the eighth week of gestation the breasts increase in size and firmness; they present a knotty and uneven feel; the blue veins coursing over them become more developed; the circles around the nipples are gradually altered in colour and in structure, constituting the areolæ; and about the same time, or perhaps somewhat later, milk may be secreted. It must be remembered, however, that some of these changes may occur from other causes than pregnancy; for the breasts often enlarge simply from the excitement produced by marriage, from accidental suppression of the menses, and from some diseases of the uterus or its appendages. In more than one case of cancer of the uterus I have witnessed the sympathetic pains in

the breast form a source of serious distress; while I have seen the same thing happen occasionally in instances of chronic metritis, and in sub-acute ovaritis. So, again, a feeling of fulness, with pain in the breasts, and a slight deepening in the colour of the areola, may be experienced by delicate women of an irritable temperament with each appearance of the catamenia; but then these symptoms, instead of being persistent, decrease as the discharge ceases, and, in a few days afterwards, subside entirely.

The alteration in that part of the breast around the nipple—the areola—deserves great attention; since when all the changes to be detailed occur, a very strong proof of the existence of pregnancy is afforded. At the end of the second month, the puffy turgescence of the nipple and surrounding disk is usually visible; the little glandular follicles, sixteen or twenty in number, are seen to be more developed; and the colour of the areola is observed to consist of a deep shade of flesh tint with a slight brownish hue. "During the progress of the next two or three months, the changes in the areola are in general perfected, or nearly so; and then it presents the following characters: a circle around the nipple, whose colour varies in intensity according to the particular complexion of the individual, being usually much darker in persons with black hair, dark eyes, and sallow skin than in those of fair hair, light-coloured eyes, and delicate complexion. area of this circle varies in diameter from an inch to an inch and a half, and increases in most persons as pregnancy advances, as does also the depth of colour. I have seen the areola, at the time of labour, almost black, and upwards of three inches in diameter, in a young woman of very dark hair and complexion; while in another instance, in a lady who had borne several

children, its breadth around the base of the nipple did not, at any time of gestation, amount to a quarter of an inch, and, at first, was not more than an eighth: this circle, however, narrow as it was, was studded at nearly regular intervals with the glandular tubercles, which were not unlike a ring of beads."* In Negro women the areola becomes jet black; in the Albino, it is rendered of a delicate rose colour. While these alterations are taking place, the breasts get full and firm. and the veins ramifying over their surface increase in size; the nipples become turgid, slightly enlarged, and covered at their apices with small branny scales; the glandular follicles on the areolæ appear prominent, and the integuments covering these parts become raised, soft, moist, and turgescent; and, lastly, numerous small mottled patches are seen scattered over the outer portion of the areola and the parts immediately around, presenting an appearance as if, says Dr. Montgomery, "the colour had been discharged by a shower of drops falling on the part." This last appearance is seldom observed before the fifth month, and is a distinctive sign of pregnancy.

The formation of the colour of the arcola depends upon the deposit of actual pigment beneath the cuticle; and it is curious that a similar deposition is also often found in pregnancy around the umbilicus, down the middle of the abdomen forming a brown line, and sometimes around the eyes. The evidence derived from the colour of the arcola is most conclusive in a first pregnancy; for, although the colouring matter is sometimes removed after delivery, yet very frequently it remains permanent. William Hunter had such faith in this sign that he always asserted he could

^{*} Dr. Montgomery, Opus jam citat, p. 106.

judge by it alone whether or not a woman was pregnant. The story goes that, on one occasion, a subject was brought to him for anatomical purposes, and that, on looking at the breast, he declared, from the appearance of the areola, that the female had died while pregnant. One of his pupils, on examining the genitals, found the hymen perfect; but Hunter still maintained his opinion, and, on opening the uterus, it was found to contain a small fœtus.—The shining silvery streaks which are seen upon the breasts after the sixth month, are the result of the distension produced by the growth of the gland, and, when once formed, are never removed.

The secretion of milk by the breasts is not-taken by itself-usually considered to be of any diagnostic value; though when it occurs in combination with other symptoms of pregnancy-especially if the woman has never given birth to a child-most observers allow that then it assumes a certain degree of importance. The reason for this reservation is the wellknown fact that the breasts may occasionally take on their natural functions without the existence of pregnancy, or, indeed, without the woman ever having indulged in sexual intercourse. Before mentioning my opinion that the secretion of milk in a first pregnancy is a valuable sign of the existence of this condition, reference may be made to the chief cases which are usually quoted to show the fallacy of this test. Thus, M. Donné has noticed that he found a fluid in the breast of a young woman, who was said never to have been pregnant, which presented all the microscopic characters of milk.* Baudelocque mentions the case of a girl, eight years old, who milked her breasts before

^{*} Cours de Microscopie, p. 441. Paris, 1844.

the Royal Academy of Surgery in Paris; and Belloc refers to a similar instance. In both of these instances the cause of the secretion was the same, being the application of a child to the breasts. I am told that it is not uncommon in Western Africa for young girls who have never been pregnant to regularly employ themselves in nursing the children of others; the mammæ being excited to action by the application of the juice of one of the Euphorbiaceæ. So, again, it is certain that the stimulus imparted by sucking the nipple will make the mammary glands of old women again perform their functions. Dr. Livingstone, speaking of the Bechuanas, tells us that he examined several cases in which a grandmother took upon herself to suckle a grandchild. He relates especially, that-"Masina of Kuruman had no children after the birth of her daughter Sina, and had no milk after Sina was weaned, an event which usually is deferred until the child is two or three years old. Sina married when she was seventeen or eighteen, and had twins; Masina, after at least fifteen years' interval since she last suckled a child, took possession of one of them, applied it to her breast, and milk flowed so that she was able to nurse the child entirely. Masina was at this time at least forty years of age. I have witnessed several other cases analogous to this. A grandmother of forty, or even less, for they become withered at an early age, when left at home with a young child, applies it to her own shrivelled breast, and milk soon follows. In some cases, as that of Ma-bogosing, the chief wife of Mahure, who was about thirty-five years of age, the child was not entirely dependent on the grandmother's breast, as the mother suckled it too. I had witnessed the production of milk so frequently by the simple application of the lips of the child, that I was not therefore surprised,

when told by the Portuguese in Eastern Africa of a native doctor who, by applying a poultice of the pounded larvæ of hornets to the breast of a woman, aided by the attempts of the child, could bring back the milk. Is it not possible that the story in the 'Cloud of Witnesses,' of a man during the time of persecution in Scotland putting his child to his own breast, and finding, to the astonishment of the whole country, that milk followed the act, may have been literally true? It was regarded and is quoted as a miracle; but the feelings of the father towards the child of a murdered mother must have been as nearly as possible analogous to the maternal feeling; and as anatomists declare the structure of both male and female breasts to be identical, there is nothing physically impossible in the alleged result. The illustrious Baron Humboldt quotes an instance of the male breast yielding milk; and though I am not conscious of being over credulous, the strange instances I have examined in the opposite sex make me believe that there is no error in that philosopher's statement." *

The two instances noticed by Dr. Livingstone in the above quotation are without a doubt quite authentic; since the fact has been noticed by others that, under certain circumstances, the male breasts will secrete milk. The case of a robust soldier, twenty-two years of age, with well-formed genital organs, whose mammæ acted so efficiently that on one occasion a wineglassfull of milk was drawn off, is related in Schmidt's Jahrbücher for July, 1837. The Bishop of Cork has given an account, in the Philosophical Transactions for 1741, of a man who succeeded in suckling and rearing his child after the death of the mother. The most per-

^{*} Missionary Travels and Researches in South Africa, p. 127. London, 1857.

fect case of this kind, and perhaps the most satisfactory, is given in the writings of Dr. Dunglison,* This gentleman says :- " Professor Hall, of the University of Maryland, exhibited to his obstetrical class, in the year 1837, a coloured man, fifty-five years of age, who had large, soft, well-formed mammæ, rather more conical than those of the female, and projecting fully seven inches from the chest, with perfect and large nipples. The glandular structure seemed to the touch to be exactly like that of the female. This man had officiated as wet-nurse for several years in the family of his mistress; and he represented that the secretion of milk was induced by applying the children entrusted to his care to the breasts during the night. When the milk was no longer required, great difficulty was experienced in arresting the secretion. His genital organs were fully developed."

Now it may at first sight appear strange that, notwithstanding these cases, I am very much disposed to believe that the presence of milk in the breasts of a woman who has never given birth to a child is an early and reliable sign of pregnancy. It is necessary to make this limitation, because the fact is beyond dispute, that a small quantity of milk may remain in the breasts for some few months after weaning, and may easily be expressed by the fingers. I have only recently obtained a few drops of milk from the nipples of a lady who is not pregnant, and whose infant died fourteen weeks ago. But the reasons for my opinion are founded on the experience which has been obtained during a long attendance in the hospital out-patient room; in which place I have, in at least two or three dozen cases, diagnosed the existence of pregnancy from the

Human Physiology. Seventh Edition. Vol. II., p. 514. Philadelphia, 1850.

presence of the mammary secretion, though the fluid could be expressed only in a very small quantity. So early as the ninth and tenth weeks has this sign held good; and, as far as can be known, it has not yet led me into error. The fluid must be pressed up from the mammary gland, and brought by persuasion, as it were, to the point of the nipple. A single drop of a slightly viscid, serous-looking fluid is sufficient; provided the drop, on being microscopically examined, is found to contain the characteristic milk globules, with large oil particles, and colostrum granules. The latter seem always to be present under the circumstances mentioned, just as they are found in the secretion of recently-delivered women. Of course, if there were reasons for believing that the girl had been stimulating the mammary glands by the application of any galactagogue, or by allowing the nipples to be sucked by an infant, I should reject the evidence afforded by the existence of a few drops of milk; but girls who come to us to be cured of amenorrhea, though they may have been unable to curb their passions, have not usually been anxious to prematurely develope their breasts.

By way of summing up the preceding observations, it may be said that the circumstances which ought to be specially considered in examining the breasts for the purpose of ascertaining the existence or absence of pregnancy are as follows:—The increase in the fulness and firmness of the entire gland and the enlargement of the veins coursing over it; the development of the glandular follicles or tubercles; the progressive increase of colour in the areola; the soft, humid, slightly turgid condition of the cuticle within the areola; the formation of small round spots or mottled patches about the circumference of the areola, and on the adjacent skin;

and the secretion of milk. When these conditions all co-exist in any given instance, a positive opinion may be entertained that the woman is pregnant; though the absence of any one or more of them is not to be taken as indicative of the reverse. The mammary sympathies are sometimes all absent, though gestation is progressing favourably; while, even if present, they may at once begin to fade on the fœtus perishing, even though it should be retained in the uterus for some time afterwards. And, finally, it may be laid down as a law, that when a woman is gravid for the first time, and has missed two monthly periods, a drop or more of fluid may be expressed from the breasts, which, on minute examination, will be found to present all the characters of true milk; while from the presence of even this small quantity, in the great majority of cases, we may alone successfully predicate the existence of pregnancy.

SECTION 5 .- ENLARGEMENT OF THE ABDOMEN.

The progressive enlargement of the abdomen, if not a very certain, is at all events a very familiar symptom of pregnancy, to which the unlearned attach much more importance than we shall find it merits. During the first thirty or forty days after impregnation the uterus falls rather low down in the pelvis, whilst its fundus is inclined backwards; so that the abdomen is even flatter above the pubes—as is proverbially known to be the case—than it was prior to this event. It is not until about the end of the twelfth week that the womb ascends just above the level of the symphysis pubis,

and that the flattening gives place to augmented fulness in the hypogastric region; the enlargement increasing from week to week, as the-at first round, but afterwards oval-uterine tumour becomes more and more developed. About the middle of the fifth month the fundus of the uterus may generally be felt midway between the umbilicus and pubes; by the end of the sixth month it may be detected reaching to the umbilicus, or a little above it : in another month it is two inches higher; at the close of the eighth month it is in the epigastric region; while before the termination of the ninth month, the fundus closely approaches the scrobiculus cordis-as the depression which exists immediately below the ensiform cartilage of the sternum is usually termed. A few days prior to the setting in of labour the uterus sinks rather lower; this being more particularly noticeable in women who have a roomy pelvis. The foregoing statements are to be regarded as approximations to the truth rather than as absolutely correct; for it is found in practice that the elevation of the fundus varies according to the size of the fœtus, the quantity of liquor amnii, &c. In all instances, however, we find that at nearly the end of pregnancy the uterus fills completely the fore part of the abdomen; the ascending and descending colon occupying either side; the transverse colon, stomach, and omentum being between the fundus and diaphragm : and the rest of the viscera lying posterior to the womb. The position of the small intestines-which, owing to their connexion with the mesentery, cannot be displaced -between the vertebral column and the posterior surface of the uterus, is not only one in which they escape any injurious pressure, but one where, by their elasticity, they can serve to protect the aorta and vena cava from any undue weight. Occasionally it happens that

a piece of intestine slips between the uterus and the ventral parietes: an anomaly, the possible occurrence of which should not be forgotten in performing the Cæsarean section. M. Dubois met with it in practising this operation in 1839.

The enlargement of the abdomen which is due to pregnancy must not be confounded with that which arises from mere tympanitic distension of the intestines; from which, it should be remembered, some women suffer for many days after conception. Still more important is it to distinguish the enlarged pregnant uterus from the increase in size due to ascites, ovarian dropsy, fibrous tumours of the uterus, hydatid tumours, and renal enlargement. The diagnostic signs between these various conditions require to be considered at some length, and hence the succeeding chapter will be chiefly devoted to this subject. It may, however, be here remarked that the enlargement of the abdomen from pregnancy is always greater anteriorly than laterally, especially in multiparæ; that the inferior part of the thorax is less expanded than in diseases of the viscera producing tumours; that change of posture varies very slightly the appearance or form of the swelling: and that the flanks do not bulge outwards, as in ascites, when the patient is placed upon her back.

When the fœtus dies, whatever the period of gestation may be, the growth of the uterus is of course arrested; and consequently the abdomen then ceases to enlarge, even though the fœtus be retained until the ninth month. Cases of this kind are always very puzzling, and sometimes it is impossible to give a decided opinion upon their nature. A few months ago I was consulted by a married lady, forty-four years of age, who complained of an abdominal tumour. She told me that her husband was some ten years older

than herself, that she had been married twenty-three years, and that it was twenty-two years since her first and only pregnancy. Six months before consulting me she began to suffer from morning sickness, and her courses ceased. She referred these symptoms to the change of life; and did not give up her opinion even on finding the abdomen beginning to enlarge. After passing over four catamenial periods, the sickness ceased. and the enlargement remained stationary. On examining the abdomen, I found a soft, oval, elastic tumour, reaching nearly to the navel; there was dulness on percussion over it, but I could detect only a feeble uterine murmur, and no fœtal heart sounds. finger introduced into the vagina discovered the cervix of normal length, and the uterus enlarged; and on practising ballottement, I fancied I could detect a fœtus falling with a very light pat on my finger. I gave a guarded diagnosis, but at the same time stated that I thought she was pregnant, and that the child was dead. This proved to be the case; for three months afterwards labour pains came on, and she was delivered of a shrivelled fœtus about the size usually attained at the fifth month.

As the abdomen enlarges, the umbilicus becomes gradually less hollow than before conception, so that by the sixth month its depression has almost disappeared, and a few weeks later is on a level with the integuments of the abdomen, or even projects above them. Occasionally, also, a dark disk or areola is developed around the navel, from which a brown streak, about a quarter of an inch in breadth, runs downward to the pubes. This line, however, often exists quite independently of pregnancy; for I have seen it on several occasions in single women suffering from fibrous tumours of the uterus, about whose chastity there could

be no doubt.* The emergence of the umbilicus likewise takes place whenever the abdomen becomes greatly distended, being merely due to the mechanical stretching of the parts.

During the last four or five weeks of pregnancy, careful palpation of the abdominal surface will often enable us to learn the position of the fœtus in utero. We may even in transverse presentations rectify the position by external manipulations; although, as the child is very moveable in the amniotic cavity, it is difficult to permanently keep the head in the superior strait of the pelvis when we have turned it in this manner. To learn the presenting part, the patient must be calm, and willing to have the examination made; and she should be placed in the recumbent posture, with the legs and thighs flexed, so as to relax the integuments. A clear diagnosis will be prevented by unusual thickness or tension of the abdominal walls, or by great tenderness of the uterus preventing pressure. The head is first sought for, and may generally be found, by pressing downwards and inwards from just above the symphysis pubis, as a globular mass. From the head in the lowest and smallest part of the uterus, the remaining portions of the fætal body are to be

^{*} Of still less value, in other words, of no significance whatever, is the discoloration of the forehead, to which old Daniel Turner alludes in the following passage:—"There is a Spot on the Face, I must just stay to menion, more peculiar, according to our great Master Hippocrates, to big Belly'd Women, and reckon'd as one of the Signs of Conception, nay, according to one of his Aphorisms, a Criterion (the' fallible) of the Sex also: Where he saith, Quæ Utero gerentes, Maculum in facie veluti ex solis adustione habent, ex, famellas plerumque gestant. To this Spot or Mark authors have generally given the name of Ephélis. Sennertus describes it as a tawny, dark, or dusky spot, principally seated on the Foreheads of breeding women, and spreading both in length and breadth at sometimes to the compass of the palm of the hand, without asperity or inequality: contrary to Celsus, who calls it Asperitas quædam et durities, malicoloris."—A Treatise of Discases Incident to the Skin, p. 181. London, 1714.

traced. If the position be a dorso-anterior one, the small spinous processes of the fœtal vertebræ may be detected by passing the fingers upwards until they sink into the groove which divides the nates. With a ventro-anterior position of the fœtus, the flat surface of the belly will be found occupied by the fore-arms, elbows, knees, and legs, which may be separately felt. A presentation of the trunk will be indicated by the shape of the belly, the transverse diameter of which will exceed the longitudinal. The child's head will also be felt in one of the iliac fossæ; and if a vaginal examination be made, no portion of the presenting part of the fœtus will be detected. Mr. G. C. P. Murray states,* that by palpation, together with auscultation, we may determine, in a vertex presentation, whether it be a first, second, third, or fourth position. Thus, if the feetal spine is to the left of the maternal umbilicus or mesial line, it is a first position; if to the right, it is a second position; if the prominent knee and elbow are found to the right of the maternal umbilicus or mesial line, and the sounds of the fœtal heart are heard most distinctly near the mesial line, it is a third position; while, if the prominent knee and elbow are found to the left of the mother's umbilicus, and the sounds of the fætal heart are heard distinctly quite towards the right flank of the mother, it is a fourth position. In speaking of first, second, &c., the nomenclature of Churchill is adopted. Should two feetal heads be felt, we have of course evidence of a plural pregnancy.

The successful way in which unmarried females, who are pregnant, manage to conceal all external appearances of their condition, by some arrangement of the

^{*} The Lancet, p. 262. London, March 13, 1858.

dress, and a skilful mode of walking, is often very remarkable. It not unfrequently happens that servants are delivered at the full period of gestation, in the houses of their employers, who have seen them daily at their work without entertaining the least suspicion of the state of affairs. A mistress, however, will possibly overlook an alteration in her servant's appearance, which a sharp stranger will at once notice; simply because the increase in size has taken place by imperceptible degrees, and the sight has become accustomed to it. The practical hint which should be deduced from this circumstance is this: that when consulted as to the cause of attacks of sickness, accompanied with a cessation of the catamenia, &c., the physician should put no trust in appearances; but if the other conditions are such as to arouse his suspicions, he ought to carefully examine the abdomen by inspection, palpation, and percussion. The dress and petticoats are to be removed, and the woman-her bladder being emptyshould be lying down on her back in bed, with the knees slightly drawn up.

SECTION 6 .- MOVEMENTS OF THE FŒTUS.

The movements of the fœtus are usually felt by the mother about the sixteenth week after conception; the term quickening being applied to designate the parent's first perception of motion. This expression is bad, because it tends to perpetuate the erroneous idea—still maintained by the English law*—that at this period the

^{*} By the Ellenborough Act, passed in 1803, it was ordained that any person wilfully causing abortion in a woman not quick with child should be fined, imprisoned, whipped, or transported for any term not exceeding

child first becomes alive, or quick; whereas, of course, we know that not only is there vitality from the earliest period of conception, but that positive indications of life are given long before the mother feels them.

The remark has been made, and, to a certain extent, it is doubtless true, that the life enjoyed by the embryo is a peculiar and circumscribed life; and that a wide difference exists between the born and unborn child. Still, allowing this, I am not aware that any physicians or jurists in this country have adopted the extreme views of Dr. Jörg; who, after tracing the development of the fœtus, and showing how closely it is

fourteen years; but if the offence were committed after quickening, it was punishable with death. Within the last few years the law has been altered, and the words of the statute 1 Victoria, c. lxxxv. s. 6, are as follows:—"Whosoever, with the intent to procure the miscarriage of any woman, shall unlawfully administer to her, or cause to be taken by her, any poison or other noxious thing, or shall unlawfully use any instrument or other means whatsoever, with the like intent, shall be guilty of felony, and being convicted thereof, shall be liable, at the discretion of the court, to be transported beyond the seas for the term of his or her natural life, or for any term not less than fifteen years, or be imprisoned for any term not exceeding three years." It has been ruled by the judges (Regina v. Goodall, Notts. Assizes, 1846), that a person making the attempt to produce abortion on a female erroneously deemed to be pregnant, may be covicted under this statute. The intent is the same whether the woman be pregnant or only thought to be so, and it seems but just that the attempt should be punished accordingly. The law makes no exception with regard to medical men inducing premature labour to benefit the female or her child; but as this operation would be undertaken without any criminal design, so it could not be held as unlawful.

With respect to the plea of pregnancy in bar of execution, the English law is still ridiculous and cruel; for when a woman is capitally convicted, and pleads pregnancy, the question of pregnancy is allowed to be determined by a jury of twelve ignorant women, and the respite is made to depend, not upon the proof of pregnancy, but upon the question of the woman having quickened. As Paris and Fonblanque remark:—"The law of the land is not only at variance with what we conceive to be the law of nature, but it is at variance with itself; for it is a strange anomaly, that by the law of real property an infant en ventre sa mère may take an estate from the moment of its conception, and yet be hanged four months afterwards for the crime of its mother."—Medical Jurisprudence, Vol. III., p. 141. London,

1823.

dependent on the mother for existence and growth, states his opinion that this fœtus is merely to be regarded as a higher species of intestinal worm, being neither endowed with a human soul nor possessing any claim to human attributes while in the uterus.* It is no argument in favour of these views to say that there is no distinct anastomosis between the blood-vessels of the uterine and fœtal portions of the placenta; or that the membranes round the fœtus constitute an essential part of it; or that the fœtal organs are adapted only to a future use; or lastly, that the fœtus cannot receive mental impressions. The development of a human being is a gradual process, uterine life consisting of a series of stages so closely dovetailed into each other that no two admit of separation. Neither physiological laws nor plain reason enable us to restrict the period at which the embryo acquires life. Hence it is just as absurd to assert that it is less criminal to induce abortion at the twelfth week of intra-uterine life than at the sixteenth, as it is extravagant to maintain that the fœtus is merely a water-worm the day before parturition, only becoming a human being after it has breathed. A child in utero may not be a living child in the eye of the law, but it is strange to find a man of science upholding such a doctrine. On the contrary, we should all exert ourselves to have the law altered, for the present state of it is practically injurious to society in at least two ways. Thus, in the first place, guilty women are frequently acquitted of the crime of infanticide because it cannot be proved that the child was alive and wholly born when the fatal violence was inflicted. In the pages of the Provincial Medical and Surgical

^{*} Die Zurechnungsfähigkeit der Schwangern und Gebärenden beleuchtet. By Dr. J. C. G. Jörg, Professor of Midwifery in the University of Leipzig, pp. 146 and 148. Leipzig, 1837.

Journal for 23rd April, 1845, a case is reported, in which it was proved that the infant had breathed; though, when found, its head was nearly severed from its body. Mr. Justice Erle directed the jury that, before they returned a verdict of guilty, they must be satisfied that the child had an existence distinct from, and independent of, the mother, when she murdered it; and as this could not possibly be proved, of course the prisoner was acquitted. Then, secondly, a woman far advanced in pregnancy may die, a live child being in utero. A medical man may be present, and able to save the infant's life by performing the Cæsarean section; yet he cannot safely do so without the consent of the husband. The late Dr. Lever met with two cases, in both of which the women died in the eighth month of pregnancy. The children were both alive after the death of the mothers, yet both fathers refused to allow the live children to be removed from the dead mothers. Legally, the conduct of these men was justifiable; morally, they would certainly appear to have been guilty of homicide. A child in its mother's womb, not being a living child in law, its extraction must be quite unnecessary. Yet this is hardly the view that we can take as physiologists; and it might be thought that even a legislator would hold that a living child, an hour before its birth, had as much right to receive protection and aid from the laws of society as one just born.

Although quickening is usually ascribed to the first movement of the child which is felt by the mother, yet some authorities deny this; agreeing with the suggestion of Burns, that it may be produced by the sudden rising of the uterus out of the true into the false pelvis. When we find the cause of such a familiar occurrence the subject of dispute, it would appear not only possible

but probable, that the effect may result from different conditions. Dr. Evory Kennedy believes that this is the case. Hence he very wisely advises us not to agree with such as assert that quickening is solely attributable to the sudden change in position of the uterus, nor with those who would make it appear to be invariably due to the first sensation which the mother has of the motion of the child; but rather to define it as a sense of the first perceptible motion in the uterine region about the sixteenth week after impregnation, having for its cause either change of position of the uterus or the movements of the fœtus. Women who think themselves pregnant usually look forward to quickening as the event which is to confirm their hopes. They describe the sensation which is produced as a peculiar flutter, or thrill, or slight tapping movement, or pulsation in the uterine region; which is followed or accompanied by a sense of nausea, a disposition to fainting, or to a fit of hysteria, and a feeling of fear or general depression. Not unfrequently after quickening has occurred, the morning sickness, and many of the other sympathetic affections which annoy the pregnant female during the early months of gestation, subside; and better health is enjoyed than has been experienced for several previous weeks.

The period at which the movements of the child are first felt by the mother is not only somewhat uncertain, but, in some few instances, where healthy children are subsequently brought forth, they are not experienced at all during the whole term of gestation. As a rule, however, the time may be said to be between the end of the twelfth and sixteenth weeks from the day of conception; the movements becoming stronger and more perceptible as gestation advances. Thus the motions which at first merely resembled a slight flutter, or creeping, can after-

wards be classified into two divisions: in the one case. consisting of a general quivering, sensible to the mother, and probably due to a change in position of the fœtus; while, in the second instance, they are compared to short blows, or knocks, and are produced by the abrupt actions of the legs or arms of the The educated hand of the practitioner laid upon the patient's abdomen can, as a rule, readily detect these movements, which can also be generally excited by practising palpation on the side of the abdomen opposite to the examiner's hand. Some obstetricians advise that the hand should be dipped in very cold water, and then suddenly laid upon the abdomen, to aggravate these movements when they are feeble; but there are serious objections to this proceeding. I would especially mention that the cold diminishes the acuteness of the sense of touch : while it is very likely to induce spasmodic contractions of the recti muscles, which are almost certain to be mistaken for fætal movements. When the movements which have been active become, without any appreciable cause, feeble and indistinct, we may reasonably fear that the fœtal health is suffering; and care should be taken to improve it by attending to the condition of the mother, and removing any local congestion, &c. Where the pregnancy is complicated with ascites, the movements become indistinct to the mother in proportion as the fluid increases in the peritoneum, and so separates the anterior wall of the uterus from the abdominal parietes. This fact has led to the supposition that it is the wall of the abdomen, and not that of the uterus, which perceives the impulse. The student must not imagine that no mistake can be made with regard to these movements, since not only is it possible for a woman who is not pregnant to persuade

herself that she feels them, but occasionally she may lead even medical men to believe that they also detect them. It is related of our first Queen Mary, of inglorious memory, that being very anxious to have issue, she fondly gave credit to any appearance of pregnancy; and at one time fancied she felt "the embryo stir in her womb." Dispatches were immediately sent to inform foreign courts of this event, while orders were issued to give public thanks. It was determined that the child must be a male; and Bonner, Bishop of London, directed public prayers to be offered, that Heaven would please to render him beautiful, vigorous, and healthy. The result proved that the queen's sensations were due to the commencement of a dropsy.* Without a doubt it seems strange that a woman should make such a mistake, especially if she has previously had children; but it cannot be denied that the pulsation of the aorta in dyspepsia, or the rapid movement of air in the intestines, or some spasmodic action in the uterus, will so simulate quickening-particularly when aided by a vivid imagination-as occasionally to deceive the most experienced and intelligent.

^{*} Refer to The History of England, by DavidHume. Vol. III. p. 348. New Edition. London, 1841. Also, Lives of the Queens of England. By Agnes Strickland. London, 1851. This author, speaking of Mary's deplorable state of health from dropsy, says:—"The females of her household and her medical attendants still kept up the delusive hope that her accouchement was at hand. Prayers were put up for her safe delivery in May, 1555; and circulars were written, similar to those prepared at the birth of Queen Elizabeth and Edward the Sixth, in which blanks were left for dates, and for the sex of the royal offspring. The news was actually published in London, and carried to Norwich and Flanders, that a prince was born." Vol. III., p. 550.

Section 7 .- Changes in the Uterus.

To appreciate thoroughly the changes which take place in the uterus after conception, as well as to comprehend some of the diseases which occur during pregnancy, it is necessary to have a distinct idea of the form and structure of this organ in its unimpregnated state. Hence the leading features in the anatomy of the womb may be first treated of with advantage, before speaking of the effects of impregnation.

The virgin, or unimpregnated, or nulliparous uterus, is a slightly-flattened, pyriform-shaped, hollow organ; the fundus being nearly flat, or very slightly convex; the anterior surface of the body smooth, and rather convex; the posterior surface more convex, and sometimes presenting a ridge or prominence along the median line; while the cervix is smooth and firm. It has thick muscular walls, which are so nearly in apposition as to leave only a small intermediate space, called the cavity of the uterus. Its weight is from eight to twelve drachms; and it measures about two inches and three-quarters in length, two inches in breadth at the widest part, and rather more than an inch in thickness. The multiparous organ is in every respect rather larger and heavier, the fundus is more arched and expanded, and the cervix is of greater size and flaccid.

The uterus is situated in the true pelvis between the bladder and rectum, being retained in position by the round and broad ligaments on each side; and it is artificially divided by anatomists into the fundus, body, and cervix. The fundus or upper third is covered entirely by the peritoneum, the body being only partially so; at the points of union of the sides of the fundus with the body are two projecting angles, to

which the Fallopian tubes are attached, and from whence pass off duplicatures of the peritoneum forming the broad ligaments; while the cervix, or neck, or lower third of the uterus is embraced by the upper end of the vagina, into which the uterine cavity opens—the aperture being known as the os uteri. The os uteri—transverse in the virgin, round and puckered in the multipara—is bounded by two thick lips, an anterior and a posterior; the latter being the thinnest and rather the longest of the two, although from the position of the uterus in the pelvis the reverse seems to be the case. The epithelium of the mucous coat covering the lips and vaginal portion of the cervix uteri is of the tessellated or squamous variety; and beneath this epithelium are numerous vascular papillæ or villi.

On carefully dissecting this organ-so justly spoken of by Swammerdam as the miraculum natura-its walls will be found to consist of three lavers, which, however, are so blended together that no actual line of demarcation can be seen, even by the microscope, to exist between them. First, we find the thin peritoneal or serous coat forming an external investment to the body and fundus. Secondly, there is the proper substance of the uterus-the thick muscular structurecomposed of pale, unstriped, muscular fibres, interlacing in all directions; and forming, with a homogeneous connective tissue, longitudinal and transverse, oblique, and circular and transverse layers of fibres. The external stratum of longitudinal and transverse fibres is thin, the middle layer is strong and thick, whilst the fibres of the internal coat are fine and delicate. Thirdly, we have the vascular mucous membrane lining the cavity of the uterus, and constituting the internal coat of the organ.

The peritoneum is reflected from the posterior sur-

face of the bladder on to the anterior surface of the uterus at about the part where the body joins the cervix; it then ascends over the body and fundus of the organ, and descending down the posterior surface, covers the upper end of the vagina before turning upwards to invest the rectum. At the sides of the superior portion of the uterus, the peritoneum is continued on to the Fallopian tubes, the round ligaments, and the ligaments of the ovaries; the duplicatures between which these appendages of the uterus are contained forming the broad ligaments. During pregnancy the component elements of the peritoneum increase pari passu with the other uterine tissues; so that, without becoming attenuated, this serous membrane still invests those parts of the uterus which were covered by it in the non-pregnant condition.

According to some recent valuable microscopic researches, the substance of the uterus would seem to be made up of fibrous and areolar tissue, with a vast number of muscular fibre cells, fibre germs, or embryonic nucleated cells, which have the power of development into non-striated involuntary muscular fibres. The diameter of these cells is about the 1 th of an inch, and their length somewhat greater. In the unimpregnated or nulliparous uterus, under ordinary circumstances, the contractile fibre cells or germs remain quiescent; but on the occurrence of impregnation, the growth of a polypus, or the continued application of irritation to the cavity or walls, they commence a career of growth and multiplication. During pregnancy each muscular fibre cell, according to Kölliker, increases from seven to eleven times in length, and from two to five times in breadth. Each cell is then seen to have a distinct oval nucleus. These fibre cells are of great importance, as it is to their development that the gravid uterus

owes its contractile properties. "They may be compared," says Dr. Tyler Smith, "to the derivative germcells, by which lost parts are reproduced in the lower animals, and which, but for the loss which calls forth their development, would for ever remain inactive. In the case of the uterus, unless impregnation or some other stimulus be applied, these germ fibres remain through life in a rudimentary state. In the unimpregnated condition it is probable that the germ fibres or fibre cells are in a more advanced state in some uteri than in others, particularly in multipara. Cases are met with in which the uterus expels coagula, or the dysmenorrhœa membrane, by contractile efforts, even in the unimpregnated condition. It is probable, indeed certain, that, by relaxation of the fibre cells of the os and cervix, and contraction of those of the body. the os uteri may be opened, and matters frequently expelled from the cavity of the virgin uterus."* soon as the fecundated ovum has reached the uterus the fibre cells begin to elongate; so that, as just mentioned, at the time of labour they are very many times longer and wider than before impregnation, while new generations of cells are likewise formed. The development of new cells is most active in the early part of pregnancy, and is supposed to cease at the sixth month. The contractile power of the uterus at the completion of gestation is owing to these colossal muscular fibre cells; this power being retained even for some few hours after death, so that a fœtus may be expelled after the decease of its mother.

The uterine cavity is about two inches and a half

^{*} A Manual of Obstetrics. By W. Tyler Smith, M.D., &c., p. 36. London, 1858.

in length; it is of a triangular shape in that part belonging to the fundus; and its narrowest portion is found at the junction of the body with the cervix-a part sometimes spoken of as the os uteri internum. Three apertures open into it, i.e., the two uterine extremities of the Fallopian tubes, at the angles formed by the junction of the fundus and body, and the os uteri. The cavity is lined by ciliated mucous membrane, continuous with that lining the Fallopian tubes and the vagina. This membrane is composed of numerous minute follicles, capillaries, epithelium, free nuclei, fibre cells, and amorphous connective tissue. In the body the mucous membrane is smooth, pale in colour, and can be seen by a lens to be dotted throughout with the orifices of numberless simple tubular glands, resembling the follicles of Lieberkühn in the intestine; these glands being about a quarter of an inch in length, being arranged vertically side by side, and probably having for their function-according to Goodsir, Kölliker, Tyler Smith, and others-the office of elaborating the material out of which the decidua reflexa is formed. The mucous coat of the cervix is marked by four longitudinal ridges, from all of which rugæ are directed obliquely upwards on each side, presenting an appearance which has been named the arbor vitæ uterinus. All parts of these rugæ, as well as the grooves or sulci between the columns, are covered with multitudes of mucous cysts or follicles.* The viscid

^{* &}quot;In a portion of the cervix, comprising only three ruge and their two interspaces, upwards of five hundred mucous follicles were easily counted, so that it is within the limits of moderation to say that a well-developed virgin cervix uteri must contain at least ten thousand mucous follicles; indeed, even this number is probably greatly exceeded."—On the Pathology and Treatment of Leucorrhea. By W. Tyler Smith, M.D., &c., p. 26. London, 1855.

secretion from these follicles is of alkaline reaction; it keeps the cervix uteri moist in the ordinary condition of this part, it forms the mucus plug which closes the os during pregnancy, and it serves to freely lubricate the cervix and vagina during labour.

When the fertilized ovum reaches the uterus it finds the mucous lining of the body much increased in thickness, softness, and vascularity, and having an evidently increasing tendency to detach itself from the fibrous tissues beneath, to which hitherto it has been so closely attached. This membrane is now spoken of as the decidua vera, or decidua uteri, and it forms the external envelope of the fœtus. The decidua reflexa, or decidua ovuli-probably formed by the ovum sinking into a depression or follicle of the decidua vera, which depression becomes developed around the germ so as to envelope and fix it in position*—is after a few days separated from the uterine decidua by a well-marked space, containing a little pinkish fluid; which space gradually diminishes as the embryo increases in length and breadth, until the two membranes are brought into such close contact that they cannot usually be sepa-

The mode of formation of the decidua ovuli is still a subject of dispute with physiologists; the difficulty of investigating the question being increased by the circumstance that no such tissue is found in the gravid uteri of the lower animals. The explanation given in the text is, I believe, the one generally received as correct; but Weber has thrown out another suggestion. He believes—to use Dr. Priestley's words—that this membrane "is actually the primary lamina secreted before the ovum enters the uterus, which separates in two-thirds of its extent from the layers immediately beneath it to adhere to the ovum and retain it in position; the remaining third not separating, but remaining as a centre of nutrition by its union with the womb." On this principle the decidua vera must be regarded as a subsequent formation on the uterine walls, or a deeper layer, secreted after the manner of the previous growth. Dr. Priestley accepts this view as being probable; and states the reasons which have influenced him, in his recent valuable work.—Lectures on the Development of the Gravid Uterus. London, 1860.

rated. The exact period when this takes place is unknown; but it is probable that it occurs between the third and fifth mouths. Thus the ovum is surrounded in two-thirds of its circumference by the decidua uteri and the decidua ovuli, these membranes coalescing in the remaining third, and forming a thick layer, by which the ovum and the uterus are closely united to each other; at this part the placenta is formed. If the decidua ovuli be laid open the ovum is seen surrounded by itsown membranes-viz., first, by the chorion with its villi, and then by the amnion. The villi of the chorion take root, as it were, in the substance of the decidua, and effect the process of imbibition from the maternal capillaries; the internal surface of this tunic being smooth like a serous membrane. If we examine the villi from this internal surface we shall find that they are hollow, like the fingers of a glove. As development proceeds, a little vesicle—the allantois from the embryo approaches the inner surface of the chorion and spreads over it, the umbilical vessels ramifying upon it. When the surface of this minute sac unites with the chorion, it forms the vascular laver of the latter, or the endo-chorion as it is termed. From this layer capillary loops are given off, which enter the villi; and the latter then become largely developed, forming numberless irregular branches, which ramify and constitute a very intricate network in the decidua. The villi at first branch out from the whole of the external surface of the chorion; but as those imbedded in the ovula decidua get separated from the uterus by the decidual cavity they become atrophied, and disappear. At the same time those branches in contact with the uterine decidua undergo a luxuriant and progressive development to ultimately form the

fætal portion of the placenta. The amnion is a tough transparent membrane, which at first closely surrounds the embryo, and is continuous with the integument of the fœtus at the umbilicus. As the liquor amnii is secreted on its inner surface, the membrane gets separated more and more from the fœtus, and, pari passu, is urged into contact with the chorion, to which it becomes closely applied. During the first and second months of pregnancy there exist in the space between the chorion and amnion the allantoid and the umbilical vesicles—temporary structures, whose pedicles form part of the umbilical cord, and which are enclosed in a sheath of the amnion. The sac of the allantois disappears within a few days of its formation; but the pedicle remains, ultimately forming one of the ligaments of the bladder, and being known as the urachus. The umbilical vesicle, the analogue of the yolk-bag in the egg of oviparous animals, is large during the first few weeks of gestation, and communicates freely by its duct with the fœtal intestine at the situation of the umbilicus. The volk-coloured fluid contained in it is a source of nourishment to the embryo; and when this supply is no longer needed, as after the second month when the placenta becomes developed, the vesicle gradually shrivels up. pedicle receives an artery and vein from the fœtus, called the omphalo-mesenteric vessels, and these disappear as the vesicle gets atrophied.

The uterus is very freely supplied with blood-vessels, receiving the two ovarian or spermatic arteries from the aorta, and the two uterine from the internal iliacs: with nerves from the sacral plexus of the cerebro-spinal system, as well as with very many branches from the great sympathetic: and with very numerous lymphatics,

which run into the pelvic and lumbar glands. During pregnancy the lymphatics, arteries, and veins ramifying through the uterine tissues undergo a very marked increase both in length and breadth: the veins especially becoming broad flattened channels, which anastomose and form large sinuses. The venous canals opposite the placental insertion are larger than elsewhere. very remarkable dissections of Dr. Robert Lee would seem to show that the uterus is much more abundantly supplied with nerves than has hitherto been allowed, that these nerves have numerous ganglia connected with them, and that they become much enlarged as gestation progresses. It has, however, been denied that the structures regarded as nerves by Dr. Lee are really such; and although the subject is still involved in doubt, yet most of the recent investigations tend to prove that it is merely the fibrous neurilemma or nerve sheaths which become spread out, and that no multiplication or increased development of the nerve tubules and ganglionic nerve corpuscles takes place.

In examining those changes which take place in the uterus after conception, and which are appreciable as marks of diagnosis, we have to consider the alterations presented by the os and cervix, as well as those induced in the size and consistence of the whole uterus. On making a vaginal examination in a female who has never been impregnated—sexual intercourse per se has no effect upon the uterus—the cervix uteri is found projecting into the vagina to the extent of rather more or less than half an inch; its component structures are firm and consistent to the touch, like fibrous tissue; there is neither hypertrophy nor congestion; and the os uteri can be felt as a small transverse opening, with well-defined margins. Immediately after conception

this condition begins to undergo certain alterations; since the cervix participates in the general congestion which the genital organs then experience, while its glands secrete the plug of tenacious mucus which fills the canal. As a result of these changes, the lips of the os uteri are found, about the end of the first month, to be more swollen and softer than they were previously; though the change is hardly sufficient to be generally appreciated. As gestation advances, the softening invades the whole cervix, progressing from below upwards; all its tissues seem thicker and more elastic than before; and its canal becomes slightly widened, so that each month the finger can penetrate deeper into it. After the eighth month the tissues of the neck are often as soft as those of the vagina; though it must be remembered that this softening is not only slower in primiparæ than in women who have previously had children, but is seldom as wellmarked.

All authors agree that the cervix undergoes no modification in length during the early months of gestation. But it is almost universally taught that in the fifth month the projection of the cervix into the upper portion of the vagina becomes lessened; the shortening being said to be due to a gradual drawing up of the cervix, by which its walls are added to those of the body. So important have these views been deemed, that the diagnosis of the different periods of pregnancy has been partly based on this gradual shortening; and the rule is generally laid down that the neck has lost one-third of its length at the fifth month, one-half at the sixth, two-thirds in the seventh, four-fifths in the eighth, and the remainder in the ninth month. In the year 1826, M. Stoltz tried to prove that all this is an

entire error: and attempted to demonstrate that the cervix retains almost its whole length till the last fortnight of pregnancy. Many writers had previously noticed that sometimes the neck did not shorten; but the cases in which this was observed were thought to be exceptional.* In 1839, M. Cazeaux advocated the views of Stoltz; but still they were not generally adopted. Even the most recent text-books on midwifery insist on the occurrence of this change, and give very exact diagrams, probably drawn from the imagination, illustrative of its gradual progress, M. Cazeaux's opinion seems to have been that the cervix undergoes, during pregnancy, at least in primiparæ, a decided though slight diminution of length; and that this diminution is produced, not by the enlargement and distension of the cervical cavity from above downwards, but by the approximation to one another of its two extremities, the cavity becoming more markedly fusiform, and filled with its ordinary mucous secretion. Now these observations seem to have led Dr. J. Matthews Duncan to investigate the subject anew; and he says positively that the length of the cavity of the cervix undergoes little or no change during pregnancy, and certainly no change which can be measured or appreciated during life. + He founds this opinion on the results of numerous vaginal examinations; but chiefly on the careful examination of the uteri of women who have

p. 773. March, 1859.

^{*} For example, Smellie says :- "The neck of the womb will, in some, be felt as long in the eighth, as in others at the sixth or seventh month."-The Theory and Practice of Midwifery. By W. Smellie, M.D. Fifth Edition. Vol. I., p. 188. London, 1766.

+ "On the Cervix Uteri in Pregnancy."—Edinburgh Medical Journal,

died at different stages of utero-gestation. Dr. J. M. Duncan does not allude to the latter days of the ninth month of pregnancy, because it is undoubted that painless contractions are then slowly going on, and that the cervical canal becomes completely obliterated. Without pretending to have made any special observations upon this subject, yet it is due to Dr. Duncan to say, that my general experience leads me to regard his views as correct; and I entertain but little doubt that he will succeed in dispelling the error which has hitherto been so pertinaciously maintained.

The development of the body of the uterus which results from pregnancy, takes place whether the impregnated ovum arrives in the uterine cavity or not; though it does not occur in equal degrees in the two cases. Dr. Arthur Farre, in his elaborate essay on "The Uterus and its Appendages,"* states that in the case of extra-uterine pregnancy, a considerable thickening of the uterine substance usually results, together with a general enlargement of the entire organ; this enlargement being equal to that which is observed in the third month, and in some cases-when gestation is not interrupted—even in the fourth month of ordinary pregnancy. When gestation follows its normal course, the uterus is found at the full period to have increased about twenty-four times in weight, and rather more than five times in length. The rate at which the womb amplifies is liable to some variety, owing to difference in the size of the fœtus, the number of ova impregnated, the quantity of liquor amnii, &c. Making

^{*} Cyclopædia of Anatomy and Physiology. Supplementary Volume p. 645. London, 1858.

certain allowances, however, it may be laid down as a general rule that the rate of increase, expressed in calendar months, is as follows:—

DIMENSIONS OF THE GRAVID UTERUS AT THE CHIEF PERIODS OF PREGNANCY.

	Length.	Breadth.	Antero-Posterior Measurement.
End of 3 Mouths. 11 4 11 15 17 16 17 17 7 17 18 17 19 9 17	4½ to 5 inches. 5½ to 6, 6 to 7, 8 to 9, 10 to 11, 11 to 12, 12 to 14,	4 inches. 5 ,, 5½ ,, 6½ ,, 7½ ,, 8 ,, 9½ ,,	3 inches. 4 ,, 5 ,, 6 ,, 6½ ,, 7 ,, 8 to 9 ,,

The gradual change in the dimensions of the uterus just described cannot of course occur without this organ also undergoing an alteration in its position. For the first three months of gestation the womb remains in the pelvic excavation, being not only congested and enlarged, but also slightly retroverted. It then gradually rises out of the cavity of the pelvis, so that about the third month and a half, or the beginning of the fourth month, the fundus can be felt above the symphysis pubis; and at this time the fætal movements are usually first appreciable to the mother. If we trace further the gradual elevation of the fundus, we shall find that during the fifth month it has risen to halfway between the symphysis and umbilicus; during the sixth it has reached as high as the umbilicus; in the seventh it is to be found nearly midway between the umbilicus and ensiform cartilage of the sternum; while by the end of the eighth month it has almost reached the ensiform cartilage, and in another fortnight has quite done so. The uterus, resembling a moderately distended bladder of water, seems now to fill the whole abdomen; when, some ten days before the setting in of actual labour, it sinks down to a lower level, so that the woman appears rather smaller than she did previously

A few words on the changes which the uterus undergoes after parturition will serve to complete this section. Directly the fœtus and placenta have been expelled, the organ which has contained them for forty weeks begins to diminish in size by a gradual contraction of its tissues; so that in a day or so it only fills the pelvic cavity and the hypogastric region, and is not much larger than a cricket-ball. The following table by Dr. Heschl, shows the decrease in the weight of the uterus:—

Immediately after delivery . . . 16 - 8At the end of the first week it weighs 13 - 5At the end of the second , 10 - 11At the end of the fifth , 5 - 6

And in the second month it comes down to its normal weight of $1\frac{1}{2}$ to $2\frac{1}{2}$ oz.; whence it appears that the most rapid diminution takes place in the second week after delivery. Moreover, the size of the womb directly after labour depends on the degree of contraction; but generally it is from eight to ten inches long, the same in breadth, with its walls an inch thick, and its tissues of a white or pale red colour.

A vast amount of time and trouble has been expended to discover the condition of the uterine cavity after the termination of labour. It has been already shown that the decidua uteri consists merely of the hypertrophied mucous membrane of the uterus; and as this outer envelope of the fœtus forms a portion of the secundines, and is consequently expelled after delivery, it has been thought by many physiologists that the inner surface of the uterus is left entirely denuded. Cruveilhier, indeed, asserts that under these circumstances there is no mucous membrane at all to be found, except just at the inner surface of the cervix uteri: the muscular tissue of the uterus being everywhere exposed. compares this condition with that of a stump after an amputation, the gaping veins at the site of the placenta being like the open-mouthed vessels left by the knife; a false membrane, the result of local inflammation, being thrown over the surface prior to the formation of a new mucous coat. Drs. Simpson, Rigby, Heschl, and many more, have accepted this explanation; but its correctness has not been taken for granted by others. Dr. Matthews Duncan, in some excellent contributions on this matter, asserts that the mucous membrane is never, after a natural labour, so far removed as to lav bare the muscular fibres; and the dissections of two or three good observers seem to confirm this statement. Briefly, it may be said, that at the end of an ordinary labour a stratum of the decidua uteri is left to protect the interior of the cavity, until the mucous coat is reproduced; after which the old portion undergoes fatty degeneration, breaks up, and comes away in shreds with the lochial discharge.

The atrophy of the proper uterine tissue commences about the fourth or sixth day after labour, and consists in the transformation of the muscular fibres into molecular fat; while at the same time the uterus more rapidly diminishes in volume and weight. At the end of a week from the expulsion of a full-grown fœtus the organ is about six inches in length; when a fortnight has

elapsed, it is scarcely five inches; while by the completion of the fifth or sixth week it is almost restored to the normal volume of the unimpregnated uterus. The whole process of degeneration and reconstruction is spoken of as the *involution of the uterus*.

While the fatty degeneration of the muscular fibre cells, and the absorption of the oil particles is steadily progressing, a new series of nucleated fibre cells is developed to take their place; the change being ultimately so complete, that, according to Heschl, not one single fibre of the uterus which existed previous to childbirth remains behind. As the disintegration of the old fibres and the development of the new advance, the uterus loses its reddish colour, and becomes very friable, as well as of a dirty yellow hue; this latter colour slowly disappearing as the new muscular fibre cells are at first gradually, but at length rapidly, increased in It is not until about the end of two months that the reconstruction of all the tissues of the uterus is complete: and sometimes it is much later than this. for the process of involution may be retarded or arrested by puerperal inflammation and other causes. When the involution is perfected, the organ, which weighed about one pound and a half immediately after delivery, is, as it were, replaced by a new structure, usually weighing rather less than 2 oz., and having a cavity only 21 inches in length. It must not be imagined that the uterus thus formed minutely resembles the womb of the virgin; on the contrary, as has been already mentioned, the body is rather larger, the os is more patulous and circular, the lips are more fully developed, and the edges of the latter are notched or fissured. If, with respect to the reproduction of these altered conditions, the question Cui bono? be asked, it cannot be answered; but, notwithstanding that the reason of all this does not at present admit of explanation, yet that it is so will be readily understood, if we only remember that although the component structures of the skin—to take a familiar example—are undergoing a constant process of growth and decay, yet moles, cicatrices, and other abnormal marks are all reproduced with the most accurate precision.

SECTION 8.—BALLOTTEMENT, OR REPERCUSSION.

Ballottement, or repercussion, is a valuable means of acquiring information as to the existence of pregnancy, being less liable to deception than many of the other signs. It depends for its production upon the tilting of the fœtus, whether alive or dead, upwards in the liquor amnii in which it floats; the force being communicated in such a manner that the child descends upon the finger which dislodged it with a slight impulse.*

There are three ways of practising ballottement. The first, or external method, is performed by placing the patient on her side, on the extreme edge of the bed, with the abdomen projecting over it. One open hand is then laid on the under surface of the abdomen, and the other on the upper to ensure steadiness; when by making a sudden impulse with the lower hand, the fœtus will be propelled to the opposite side of the bag of the amnion, and will afterwards rebound on the spot

^{*} Ballotter, to toss; as to toss a ball at tennis.

from which it was projected. The second external plan-hypogastric repercussion as it has been termedconsists in placing the woman on her knees, with the shoulders depressed, or on her side, with the hips well raised; the fœtus will consequently gravitate towards the fundus uteri, which is in contact with the abdominal parietes, and by then making a jerking pressure as before, the same result will be obtained. The third, or internal method, is the best, and should generally be resorted to when there is no objection to instituting a vaginal examination. The patient may be examined in the upright position if necessary; though obviously it will be better for her to be in bed, reclining upon her side, with her shoulders much elevated. ever position is adopted, the bladder and rectum should both be empty, so as to afford as much space as possible. The first two fingers of either hand are then to be freely oiled and introduced into the vagina, and carried upwards, as far as they can be made to extend, to that thin portion of the body of the uterus situated between the cervix and posterior wall of the bladder. The disengaged hand is then to make steady pressure downwards upon the abdomen, while the woman is directed to take a deep inspiration. The examiner taking advantage of the temporary depression of the uterus, makes a quick jerking movement, upwards and forwards, with the fingers in the vagina; when he will receive the impression as of a slight body bounding away, which in a few seconds falls again on the tips of the fingers that have been kept in contact with the uterus.

Most writers state that the presence of this sign is a positive proof of the presence of a fœtus in the uterus; but the proposition is rather too absolute. For example, it is doubtless possible that a stone resting in the bas-fond of the distended bladder might lead to an error. The same might happen in ovarian dropsy, should there exist a small pedunculated tumour within a larger cyst. So, also, an enlarged and indurated ovary, co-existent with ascites, has produced a moveable tumour, which caused an impulse very like that conveyed in pregnancy by the motion of the fœtus in the liquor amnii. M. Cazeaux relates that he once met with a case in which the fundus of an anteverted uterus could readily have caused a mistake. He says, "During the time I acted at the Obstetrical Clinic, as chef de clinique, a woman was subjected to the touch, who declared herself pregnant, and advanced three or four months. At first I examined her in the recumbent position, and found all the negative signs of gestation; but one of my advanced pupils then performed the same manipulation in the standing posture, and declared that he perceived the ballottement. When I re-examined her, I found the following condition of things: the neck was strongly pushed backwards, and a little to the left, it was slightly softened, and sufficiently patulous to admit the extremity of the finger. (This woman acknowledged she was delivered only four months previously.) As the finger left the cervix and advanced just behind the symphysis pubis, it encountered a large resisting surface, which was evidently the body of the organ; and then by giving a slight blow, a moveable body was felt there, which immediately fell back upon the finger, exactly as the fœtus would in the fourth month. I confess that at first I thought her enceinte; but re-touching her in the recumbent state, I once more remarked the negative signs, though my finger could not now detect the substance which had

been so easily moved when she was standing. At the third examination I discovered an anteversion of the womb, so complete that its anterior face had become inferior or horizontal, and it was over nearly the whole extent of this face the finger had passed in examining; and further, I found that the fundus uteri, situated behind the symphysis pubis, was the light moveable body which had produced the sensation of ballottement."*

The absence of this sign must not be taken as a decisive proof that pregnancy does not exist; since many circumstances may prevent even a careful examiner from detecting it. Malposition of the fœtus renders its appreciation difficult: so that in foot or breech presentations, the soft tissues greatly impede the rebound from being felt, while in transverse presentations it is generally impossible to obtain it at all. Presentation of the placenta may hinder its detection; for the fœtus will rebound on this organ, the thickness and softness of which is very likely to prevent any impulse being communicated to the finger. Repercussion may usually be practised with the greatest hope of success, from the end of the fourth month of pregnancy to about the termination of the seventh; for at an earlier period the fœtus is too small and light to be distinctly felt, while at a later time it is usually too bulky to move or float freely, and the liquor amnii is also relatively less in quantity.

In the exploration of the vulva, vagina, and cervix uteri by the touch, the physician should accustom himself to use the fingers of either hand; for without going

^{*} A Theoretical and Practical Treatise on Midwifery, &c. Second American, translated from the Fifth French Edition, by W. R. Bullock, M.D., p. 150. Philadelphia, 1857.

so far as to assert that a good obstetrician must necessarily be ambidextrous, it is still certain that it will prove very advantageous for him to be so. This will be especially the case in certain displacements of the uterus, when the right and left hands may have to be alternately employed to make a positive diagnosis; as well as when the accoucheur is incapacitated from using one hand by a wound, whitlow, &c. It occasionally becomes necessary to learn the condition of the uterus by making an examination per anum: a proceeding, however, which is only to be resorted to when absolutely necessary, since it shocks the sense of decency in most women. The chief reasons which render such an examination advisable are as follow :the hymen being intact it is not only difficult to practise the vaginal touch, but we ought to avoid rupturing this membrane, because the suspicion of pregnancy may be unfounded; the existence of a tumour in the rectovaginal septum may render the ordinary examination almost useless; the increased bulk of the uterus during the first two months of gestation is more easily detected per rectum than per vaginam, and occasionally it may be desirable to ascertain the extent of this enlargement; and lastly, it may be demanded by the existence of extreme sensibility of the vagina, or by the union of the sides of this canal owing to abnormal adhesions, or by the presence - imaginary or real - of some malformation. In practising it, the patient ought generally to be placed upon her left side, while the examiner should carefully introduce the index or second finger of his left hand, so that its sensitive pulpy extremity may be applied to the back of the uterus.

SECTION 9 .- SIGNS DERIVED FROM AUSCULTATION.

A very great advance was made in the value of the diagnostic signs of pregnancy, when M. Maior-an eminent surgeon of Geneva-announced his discovery of the sounds of the fœtal heart by the aid of auscultation. This was towards the end of the year 1818. But owing either to this gentleman's want of energy, or to his entertaining only a slight conception of the results which his discovery would lead to, he remained content with merely publishing the circumstance that he had heard the fœtal heart's action, by applying his ear to the abdomen of a woman far advanced in pregnancy; while he left to others the task of prosecuting the inquiry further, and establishing the results. Hence, little attention was paid to the subject until Dr. Lejumeau de Kergaradec gave to the worldsome four years later-his systematic treatise; in which he not only proved that the fœtal heart-beats could be detected at a much earlier period than M. Major had suspected, but also pointed out a new and important sound-the uterine souffle.* No further progress was made for some few years, until-in 1833 -Dr. Evory Kennedy drew attention to the sounds heard in advanced pregnancy in the arteries of the umbilical cord; which were described by him as the funic pulsation and the funic souffle. + Again an interval elapsed, though a short one; and then Dr. H. F. Naegele proved that the noise produced by the

^{*} Mémoire sur l'Auscultation appliquée à l'Etude de la Grossesse. Paris, 1822.

[†] Ubservations on Obstetric Auscultation, with an Analysis of the Evidences of Pregnancy, &c. Dublin, 1833.

plunging movements of the fœtal limbs in utero may be heard as gentle taps repeated at intervals, at an earlier period than they can be detected by the hand of the practitioner applied over the mother's abdomen.*

In considering separately these phenomena, the order in which they have just been mentioned will be reversed; so that the most important may be the last treated of. † Before entering upon this task, a few words will suffice to show the best mode of practising obstetric auscultation. As in other branches of medicine so in this, a certain amount of knowledge and tact is necessary to detect the various fœtal and maternal sounds, and to appreciate their value; and even after a familiarity with these sounds has been acquired by painstaking study, it must be still remembered that a well-schooled ear, steady attention, and great patience will ever be found requisite in the examination of the majority of cases. There are very few, if any, occasions, on which mediate auscultation will not prove very preferable to immediate; for, independently of utility and convenience, it is obviously better to apply the stethoscope to the patient's abdomen than the naked ear. Some writers assert that the phenomena are best heard early in the morning, when the patient is fasting, and when the bowels and bladder have been emptied. Where the practitioner has confidence in his sense of

^{*} Die Geburtshülfliche Auscultation, p. 62. Mayence, 1838: or Dr. West's translation, p. 50. London, 1839. + There are two other sounds which the stethoscope, applied to the

[†] There are two other sounds which the stethoscope, applied to the abdomen of a pregnant woman, may at particular periods detect; but a discussion as to their utility does not fall within the scope of this volume. The first is a supposed murmur, like the sound of fermentation, which is said by M. Stoltz of Strasburg to accompany the decomposition of the liquor amnii and feetal fluids. The second is a crackling noise, imitated by drawing the nail over a rush-bottomed chair, asserted by M. Caillant to be caused by the separation of the placenta.

hearing, however, he need not wait for any special time of the day; taking care rather to seize the present opportunity. The patient should be placed on a couch of a convenient height, upon her back, and with the head raised by a pillow; the limbs being moderately flexed, so as to relax the abdominal muscles, and usually having the abdomen covered with a thin chemise. Care must be taken, too, that there is no retention of urine. Supposing the physician should fail in detecting the evidence sought for, he must not rest satisfied with this negative testimony; since many obstacles to his success may be present. The chief of these obstacles are,-too early a period of gestation; great feebleness or death of the fœtus; integuments loaded with fat; loud noises made by the intestinal gases; and distension of the abdomen from dropsy or from some tumour co-existing with pregnancy. On ausculting the abdomen of a healthy woman who is not pregnant, whether at a catamenial period or not, borborygmi and other noises, due to flatus in the intestines, will be heard; together, generally, with the pulsations of the abdominal aorta.

The observation has been already made that the fœtal movements are generally first felt by the mother about the sixteenth week after the fruitful coition. Dr. H. F. Naegele has shown that very frequently the friction produced by these movements may be heard a few weeks earlier than this time; when the fœtus is very small in proportion to the size of the cavity containing it, and when, therefore, the free movements of the limbs are unrestrained. The sounds are perceptible as gentle taps, repeated at intervals, sometimes being continued so regularly that an unpractised

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auscultator might mistake them for the beatings of the fœtal heart. As pregnancy advances, and the quantity of liquor amnii becomes proportionately diminished, these motions are rendered indistinct; so that at the end of gestation they can scarcely be detected.

The umbilical cord in the human subject consists essentially of one large vein, and two smaller arteries coiling around it; these being bound together by a quantity of areolar tissue, and cells containing much gelatinous matter. The gelatinous material varies in quantity in different embryos: it gives thickness to the cord, and also serves to protect the vessels from the injurious effects of pressure. The funis is also covered by a layer of chorion, and externally by a reflexion of the amnion. The purified blood for the nutrition of the fœtus is conveyed from the placenta to the fœtus by the umbilical vein, which enters the abdomen at the umbilicus, passes upwards to the under surface of the liver, and at the transverse fissure divides into two branches. The larger of these branches joins the portal vein, while the smaller-under the name of the ductus venosus-unites with the inferior vena cava. The venous blood is returned to the placenta by the two umbilical arteries, which are the continuations of the feetal internal iliac arteries. At the time of labour, the funis is generally about twenty or twenty-four inches in length; but it has been found as short as five or six inches, and as long as six feet.

Now, according to the observations of Dr. Kennedy, the pulsations in the umbilical arteries can—in certain positions of the funis—be distinctly heard by the stethoscope; the beats corresponding to those of the feetal heart, and existing as long as the circulation of the fœtus in utero continues. The funic pulsations are particularly observable when a portion of the cord intervenes between some prominent part of the child's body and the anterior wall of the uterus; but unless the abdominal integuments of the mother are also rather delicate, they will be detected with difficulty. The funis also presents another phenomenon, viz., a souffle, or murmur, which is weaker than the uterine souffle, has a shorter and less hissing sound, and corresponds in frequency with the action of the child's heart. This funic souffle is said to be due to the transmission of the blood through a part of the umbilical arteries where a narrowing of their calibre exists; this diminution in size being caused either by the compression of a feetal limb, or by a knotting of the funis, or by the winding of the cord round the neck of the fœtus, or by the moderate pressure of the stethoscope.

These phenomena, it must be confessed, do not possess much practical value. Two circumstances account for this: in the first place, it will at least be very difficult to detect either the pulsations or the murmur, unless the abdominal parietes and the uterine wall are so thin that the funis and fœtal limbs can be distinguished by the touch; and secondly, they are only to be heard at the latter part of pregnancy, when we can resort to other and more useful sources of information.

The uterine souffle—or placental murmur, as M. Kergaradec termed it—is usually audible a few weeks earlier than the fœtal heart. It consists of a single, intermitting, hissing, or blowing sound, without impulse or pulsation, and synchronous with the mother's pulse. The murmur has been compared to a prolonged whis-

pered "who," or to the sound emitted by blowing a pair of bellows; and it assumes all the variations in tone of the bruit de soufflet of the heart, such as a whistling, roaring, cooing, or sawing sound.

The question as to the seat of this murmur has given rise to some controversy. At one time it was the current belief that it existed in the utero-placental circulation; and hence it was designated the placental murmur. Then many auscultators assigned its seat to the large arteries—the aorta and iliac—at the back of the abdomen, considering it as produced by the pressure of the gravid uterus; they named it, therefore, the abdominal murmur. M. Cazeaux has suggested that it is due to pressure on the iliac vessels, conjoined with the existence of an altered condition of the blood. But the most plausible view is that which regards it as originating in the arterial vessels ramifying through the uterine tissues, whence it appears to be very properly designated the uterine souffle, or murmur. The fact that it may sometimes be most distinctly heard over that portion of the uterus which corresponds with the insertion of the placenta, is by no means surprising; since we should naturally expect to find it most audible at the part where the development of the uterine vascular system is the most considerable. But Hohl's assertion, that it is to be heard only over that part, is contradicted by daily observation.

The period at which the uterine souffle can be first distinguished is liable to vary in different cases. Dr. Kennedy states that he has detected it as early as the tenth week; but I cannot recal any instance where I have been equally fortunate, though I have certainly heard it at the end of the twelfth. As a general rule, it may be heard at the third month and a half, or at

the fourth mouth, when the fundus uteri is above the pubes. In seeking for it at this early period, the stethoscope should be applied just above the pubes; for the souffle is then diffused over the whole uterus. But at a later date it will be most commonly detected by placing the stethoscope over either of the lumbar or iliac regions; though it must be remembered that this murmur changes its situation in a remarkable manner, so that no certain rules can be laid down upon this point. Indeed, the space over which it may be heard varies not only in different individuals, but in the same woman on different days; being sometimes limited to one spot, at other times existing over a much larger surface, and occasionally being found, even at an advanced period of gestation, over the whole of the anterior wall of the uterus.* Moreover, in the course of a few hours, its seat may fluctuate; so that, in the afternoon, it may be distinctly audible over a spot where it could not be heard in the morning. It is not improbable that it might be detected at an earlier period than ordinarily by means of M. Nauche's metroscope; but the necessity of introducing one extremity of this instrument into the vagina is an insuperable objection to its general employment. This souffle being quite independent of the fœtal circulation, is not in the least affected by the life or death of the infant; for it may be heard after the expulsion of the child, and even for twenty-four hours after the delivery of the placenta.

^{*} Dr. Depaul states that in 295 cases where gestation had exceeded the fifth month, it was heard distinctly on both sides in 180; on one side only in 27; at the fundus alone in 13; in 18 the stethoscope could not be placed over any portion of the uterus without detecting it; while in 12 it existed strongly marked in three places, viz., at the fundus, and just about Poupart's ligament on each side.—Traité d'Auscultation Obstetricale, p. 179. Paris, 1847.

When the uterine contractions after labour are very vigorous, however, the sound will usually be found to have ceased.

Too much importance must not be attached to the uterine souffle; for at the best, its presence can only allow us to conclude that pregnancy is probable. I am inclined to think that, as a single sign, it is of most value when heard at an early period of gestation, before any uterine or abdominal enlargement is observable; since it is then much less likely to be due to any other condition than pregnancy. To take, for example, the following case from my note-book:-In the year 1857 I was consulted by a young unmarried lady for general debility and amenorrhœa: the catamenia had been on for the last time twelve weeks previously, a drop or two of milk could be expressed from the nipples, there was no morning sickness, and no uterine tumour could be detected. On applying the stethoscope just above the pubes, I discovered the uterine souffle very distinctly; and little hesitation was then felt in stating that she was probably pregnant. months afterwards I delivered her of a live child.-It is unfortunate, but undeniable, that this murmur may not be detected, even after many examinations, and yet pregnancy may exist; though instances of this must be rare. I have also frequently heard it in large uterine fibrous tumours; and a few practitioners state that they have detected it in ovarian dropsy, an observation which I cannot corroborate. The souffle, moreover, indicates nothing as to the child's position, nor as to its strength or weakness, nor as to the number of ova which have been fertilized.

The beats of the fœtal heart are to be heard during intra-uterine life, as distinct rapid pulsations, which

bear a close resemblance to the muffled ticking of a watch. The beats-which may easily be reckonedvary in frequency from 120 to 140, or even 150 in the minute; and each beat or ventricular contraction is accompanied by two sounds. The first sound is weak, short, and obscure; the second is more sonorous and distinct, and is the one which is usually counted, for from their great rapidity it is generally impossible to compute both. The frequency of the beats bears no relation to the mother's pulse; they are uninfluenced by the uterine contractions: they are only temporarily accelerated by the movements of the fœtus: and the further pregnancy is advanced, and the greater the strength of the fœtus, the more easily will they be detected. A good idea of the nature of the fœtal heart-sounds may be acquired by listening to the chest of the new-born infant. The student will remark that the heart's action is commonly audible over a considerable extent of surface; since it may be heard by applying the stethoscope to any part of the chest, to the arm while pressed against the thorax, and perhaps to the loins. If then he also remembers that while in utero the solid fætal lungs act as good conductors of sound, he will see nothing incredible in the statements here made.

M. Depaul asserts that he has been able to distinguish the pulsations of the fœtal heart as early as the eleventh week; but very few other practitioners have been equally lucky. I have frequently tried to obtain them about this time by using the double stethoscope, and so placing the woman on her face that the uterus might fall into close apposition with the anterior wall of the abdomen; but the experiment has not been attended with success. In a large lying-in hospital to which Naegele was attached, the eighteenth week of

pregnancy was the earliest period at which the beats could be distinctly heard, while in by far the largest number of cases it was not until the end of the twentieth week. These results agree with those obtained in this country; and hence, it may be said, as a general rule, that the pulsations cannot be discovered until just about midway between the day of conception and that of labour at the full term.

The double sounds of the fætal heart may in rare cases be heard over, perhaps, half of the maternal abdomen. Usually they are confined to a spot about two inches in diameter, which—owing to the variety of the positions of the child-may exist over almost any part of the abdominal wall, though at nearly the full term it is most frequently to be found rather below and about two inches to the left of the umbilicus. When the quantity of liquor amnii is small, the fœtal thorax gets into close apposition with the uterine wall, and hence the pulsations are then heard very distinctly, but only over a limited space. On the contrary, if there be an excess of liquor amnii, the extent of surface over which the beats can be distinguished is much increased, whilst their intensity is diminished in a corresponding degree. If we detect the fœtal tic-tac beating about 130 in the minute while the maternal pulse is 90, or any number except 130, we may be positive that there is the heart of a live child beneath our stethoscope. Nothing can render such a proof invalid. But if we fail, after a careful and prolonged exploration, to discover the beats, we must not rashly conclude that the woman is not pregnant, for the child may be dead; or there may be a great abundance of liquor amnii, obscuring the pulsation; or there may be a fold or two of intestine between the uterus and abdomen, the

borborygmi in which mask all other sounds. M. Stoltz states that they cannot be heard when the dorsal region is directed backwards, unless some part of the fœtal thorax be in contact with such a portion of the uterine walls as admits of exploration; but such a position must be either very rare, or the opinion must be unsound, since M. Cazeaux asserts that in examining some seven or eight hundred women, advanced beyond the sixth month, he never failed in hearing the pulsations when the child was alive.* Professor Anderson, of Glasgow, in examining 180 pregnant women at the full time, only failed in 12 instances to find the sounds of the fœtal heart: and in these 12 cases, and in these only, was the child born dead. + Had I kept notes of all the cases in which I have resorted to obstetric auscultation, I am sure they would confirm exactly these observations of Cazeaux and Anderson. Only one fallacy can arise with respect to this sign: viz., when the maternal pulse is beating with abnormal rapidity, and the sounds are conducted along the walls of the abdomen. tion to two points will prevent our entertaining an unjust suspicion of pregnancy in such a case. In the first place, we shall find that the force of the pulsations increases as we gradually move the stethoscope upwards from the abdomen to the cardiac region; and secondly, the abdominal beatings will be perfectly isochronous with the pulse at the wrist.

The sign we have been considering is valuable on many grounds besides its certainty. Thus it is quite

^{*} Opus jam citat. p. 153. † The London and Edinburgh Monthly Journal of Medical Science, vol. IV., p. 104. London and Edinburgh, 1844.

independent of the patient's emotions; it can be sought for without her having any idea of the nature of our suspicions; while it will usually render a vaginal examination unnecessary. In the diagnosis of twinpregnancy, the only sign on which any reliance can be placed, is the detection of the distinct pulsations of two fœtal hearts at a distance from each other: the diagnosis being free from all chance of error if the beats vary in frequency in the two situations, or if a spot exists between the two where neither can be distinguished, but from which both can be reached by passing the stethoscope upwards on the one side and downwards on the other. It can readily be understood that in these cases one heart is very generally heard below and to the right or left of the linea alba, while the other is above and on the opposite side. The presence of three distinct double sounds, not isochronous, warrants the diagnosis of triplets.

When a woman is pregnant of twins, and one dies at an early period of gestation, the dead one is, perhaps, usually retained until its fellow has arrived at maturity. But it sometimes happens that the dead fœtus is expelled within a few days of its ceasing to live; while the other remains alive in utero until the completion of the full term. Now in such a case, the mother, knowing that she had aborted, would not believe herself pregnant; and consequently might be much alarmed at finding that the catamenia did not reappear, nor her abdomen diminish in size. This anxiety would be at once dispelled by our detecting the fœtal heart, and explaining positively the cause of her condition.

The assertion has recently been made by Dr. Frankenhauser, that the mean number of the beats of the fœtal heart, as ascertained by auscultation, are more frequent in female than in male fœtuses. The mean frequency of twenty-eight female fœtuses is 144 in the minute, the lowest figure, 138; the mean frequency of twenty-two male fœtuses is 120, the highest figure, 132. By applying this rule, Dr. Frankenhauser has often been able to say correctly, before birth, what was the sex of the child; and, indeed, he seems to infer that the rule has never failed him, provided it was put to the test before the contractions of the uterus during labour had deranged the natural frequency of the fœtal heart. In order to put this observation to the test of experiment, I carefully examined six women, who were all in the last month of gestation. In the first the beats were 136 in the minute, and the child, when born ten days afterwards, was found to be a male; in the second the pulsations were so quick that I could not count them, and the patient was delivered of a dead male fœtus four days afterwards; in the third instance the beats were 140, and three days afterwards delivery proved that the child was a male; in the fourth the beats amounted to 140, and the patient bore a girl; in the fifth the beats were 128, and the offspring proved to be a boy on the following day; while in the sixth instance the pulsations were 136, and the woman gave birth to a girl ten days subsequently. These experiments seem at least to prove that Dr. Frankenhauser's observations will not apply to the intra-uterine children of this metropolis.

If the mother's abdomen be ausculted at the commencement of labour, the sounds of the fœtal heart are generally to be detected in one or other iliac fossa, and more frequently in the left than in the right. The precise locality depends mainly upon the position of the fœtus, the maximum of intensity almost always cor-

responding to the part of the uterus with which the child's thorax is most closely in contact. In ordinary vertex presentations the back of the thorax is the part nearest to the uterus, owing to the child's legs being doubled up on the abdomen, the chin depressed on the chest, and the whole body bent forwards so as to present a considerable convexity on its posterior part. Hence, in the first and second positions of the head (where the back of the child is anterior), we may expect to find the fœtal pulsations most audible in the left and right inguinal regions respectively; whilst in the third and fourth positions they should be more posterior towards the woman's loins. In presentations of the face, the front of the chest is the part which lies most contiguous to the uterine parietes; and the situations of the fœtal pulsations have been found to agree therewith, being audible anteriorly (in the iliac region) when the head holds the mento-pubic position, and rather posteriorly when it is in the opposite or mentosacral position. As regards breech presentations, and footling cases, the fœtal heart is most distinctly heard near the mother's umbilicus. These views were learnt long since from an excellent essay which was read before the Dublin Obstetrical Society by Dr. M'Clintock,* and the experience which has since been gained has convinced me that they are in the main correct.

The illustrious Harvey speaks of the auricles as the primum vivens, ultimum moriens; an expression which might with some license be more justly applied to the whole heart. The moving power of this organ—the

^{*} The Dublin Quarterly Journal of Medical Science, vol. IV., p. 34. Dublin, 1847.

life of the flesh-is the blood; and it can hardly be deemed a wild conjecture if we suppose that this being to any serious extent diseased, the fœtal heart's action may become appreciably affected. At present, however, we cannot do much to ascertain by means of auscultation the condition of the child's health while in utero; for we really know nothing beyond the simple fact that excessive frequency of the pulsations, or a diminution in their force, or intermission and irregularity of their rhythm, betoken feebleness and proportionate danger. When in tedious and difficult labours we find the fœtal pulse becoming slower and slower, we may reasonably infer that undue pressure is being exerted on the funis, thereby causing the aeration of the blood by the placenta to be imperfectly performed. When, on the contrary, the beats of the heart increase in rapidity, and especially when they likewise become irregular and intermittent, it is probable that the danger does not result from the pressure upon the umbilical cord, but from compression of the brain, or from a source causing cerebral irritation. Under any of these circumstances we have an indication that the child's life is in danger: and hence the labour should if possible be terminated, either by turning or the application of the forceps.

SECTION 10.—THE MINOR SIGNS.

The first of these minor signs which claims some slight attention is derived from the urine. The examination of this secretion during pregnancy, for the

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detection of some peculiar phenomenon, has long been a favourite practice with physicians; since we find even Hippocrates, Avicenna, Galen, Oribasius, and other ancient authors, noting the changes which they thought were induced. More than three centuries ago Savonarola wrote, that from the commencement of gestation to the sixth month, more or less, the urine is clear, of a pale lemon colour, having a cloudiness on its surface, and a deposit in its centre resembling carded wool; while towards the sixth or seventh month it assumes a turbid appearance with a reddish tinge, the redness becoming more marked as the time of labour approaches. He also warned his readers not to place too much reliance on these appearances; since they are commonly seen in women with simple suppression of the menses, in cases where the uterus contains a mole, and in some instances of gouty or rheumatic inflammation.* Although the amount of information contained in these paragraphs could never have proved of much practical utility, yet it may be justly questioned whether it would be judicious to inquire-In what respect is our knowledge on this head more valuable in 1860, than it was in the year 1560?

About thirty years ago the British and foreign medical journals published accounts of a peculiar product named, by M. Nauche, kiestein; which was supposed to exist in the urine of women during uterogestation. This substance is said to become visible in the urine of pregnant women, when the secretion is allowed to repose in a cylindrical glass, protected from

^{*} Practica Canonica de febribus, pulsibus, urinis, egestionibus, vermibus, et bulneis Italiæ, &c. By Joannes Michael Savonarola, p. 685. Lugduni, 1560.

the dust. The kiestein begins to make its appearance at a period varying from one day to six or seven, after the discharge of the fluid; signs of its gradual development being distinguishable, in the majority of cases, before the end of the second day. At first it appears either as a cotton-like cloud in the centre of the glass, which cloud breaks up and forms a pellicle by its particles rising to the surface; or else as a copious sediment of a whitish colour, floating loosely at the bottom of the vessel, particles of which deposit ascend to the surface and form the pellicle, at the end of some hours or days; * or again, as a thin transparent film on the surface of the urine, which film quickly becomes thicker and more distinct. When perfectly formed the pellicle somewhat resembles the scum of fat which forms on cold broth; a character it preserves for about three days. It then begins to break up, the urine remaining faintly acid up to this time, and often emitting an unpleasant cheesy odour. The pellicle shortly becomes disintegrated into small flakes; the complete destruction being generally anticipated by the decomposition of the secretion. A pellicle somewhat resembling this of kiestein will frequently form on any specimen of urine, when it becomes decomposed; but it will be evident from the foregoing remarks that decomposition, which produces the one, really destroys the other. On making a microscopic examination of the true pellicle numerous infusoria of the genus Vibrio are seen, and frequently some fat globules; together with large crystals of am-

^{*} Dr. Stark proposed to designate this substance by the name of gravidine, both from gravidus, big with young, and also from gravis, heavy, seeing that it falls to the bottom of the vessel; reserving the term kiestein to denote the pellicle which results from the ascent of its particles on the occurrence of decomposition.

monio-phosphate of magnesia and amorphous phosphate of lime, and lithate of ammonia.

Dr. Elisha Kane, amongst others, has published the results of numerous observations on this subject. He states that, in eighty-five cases of pregnancy, he obtained a well-marked pellicle in sixty-eight, a modified but recognisable one in eleven, while six afforded no evidence.* It has been often found before the end of the second month of pregnancy, and sometimes as early as the beginning of the second week after conception. I have always failed to obtain it when the urine has contained an excess of lithates, even in cases arrived at nearly the full term of gestation. Its presence is supposed to be connected with the lacteal secretion, since when the lacteal elements are secreted with a free discharge at the mammæ carrying them off, it can only rarely be found; but if the escape of the milk be prevented, or if the breasts are very full and turgid. then kiestein can generally be obtained. Dr. Kane remarked that in most instances it continued in the urine for a short time after labour, until the mother began to suckle freely; while of ten women, eight exhibited it at the time of weaning, when the discharge of the milk was of course impeded.

The exact composition of this substance as it exists in newly-passed urine is unknown; but according to Dr. J. B. Hicks, assistant physician-accoucheur to Guy's Hospital, there can scarcely be any doubt that the action of the air alters it into a substance very similar to casein, for it is coagulable by rennet, is insoluble in cold acetic acid, and generally also in the

^{*} The American Journal of Medical Science, vol. XXX., pp. 13 to 38. Philadelphia, 1842.

hot acid. From this gentleman's researches it likewise appears that the addition of about two teaspoonfuls of rennet to some three ounces of the urine of pregnancy, produces the deposit from which the pellicle of kiestein afterwards results more abundantly, and in about half the time required for its formation by simple exposure of the urine to the air. If, when the deposit is well formed, we take about half an ounce of the lower turbid portion of the urine, add a few drops of liquor ammoniæ to it, and boil for a couple of minutes, it will be found that the deposit is formed into a semi-mucous mass, so that the urine becomes almost tremulous. When this occurs it may be said to be characteristic of the urine of pregnancy. This test can be employed equally well without the previous use of rennet. The quantity of phosphates thrown down by the ammonia may be known by gradually adding acetic acid, so as slightly to acidulate: the deposit which remains undissolved being the kiestein.*

Taken alone, the presence of kiestein in the urine can scarcely be said to be sufficiently diagnostic of pregnancy to enable us to form an opinion of much value; but when corroborative of other early signs, it is a useful aid in assisting the practitioner to a correct conclusion. It must be borne in mind, however, that many physicians and chemists entertain an opposite view. Thus, Dr. Veit, who conducted a series of experiments to determine the value to be attached to

^{*} The rennet is to be thus prepared:—Take the fourth stomach of the calf directly it is killed, scour it well inside and out with salt to remove the card, and let it drain a few hours. Then place it in a jar, and sprinkle a handful of salt on it; shortly afterwards the juice will exude and dissolve the salt, and this is then to be filtered through bibulous paper and bottled for use. Rennet, already salted, may be procured from most butchers.—Lancet, p. 281, September 17, 1859.

this product, came to the same conclusion as Höfle and Lehmann; viz., that the so-called pellicle of kiestein is no peculiar matter at all, and is not of the slightest value as a sign of pregnancy.*

More than twenty years since Mr. Ingleby observed that "in advanced pregnancy the uterus when moderately grasped or rubbed, slightly hardens, independently of actual labour, and almost instantly regains its yielding condition."+ Dr. Oldham has since pointed out that this power of contraction possessed by the uterus may be taken as a trustworthy characteristic of pregnancy; for he states that the large gravid uterus alters in a marked manner, under the influence of pressure, from a condition of flaccidity to one of Thus, if we expose a pregnant woman's abdomen, the outline of the tumour is seen to be less defined before manual examination than it becomes afterwards; for on applying the hand, the tumour which at first is felt soft and ill-circumscribed, rapidly assumes a tense rounded form, becoming firm and resisting. According to Dr. Oldham, no other tumour but the pregnant uterus possesses the power of altering its form when irritated by palpation: but I must here beg to differ in opinion from this gentleman. Only a short time since I was examining the abdomen of a poor woman, suffering from an attack of flooding, caused by the presence of a very large polypus in the uterus. The loss of blood had been very great, so that

^{*} The British and Foreign Medico-Chirurgical Review, vol. VIII., p. 551. London, 1851.

* + Facts and Cases in Obstetric Medicine, &c. By J. D. Ingleby, M.R.C.S., p. 250. London, 1836.

‡ Medical Times and Gazette, January 26, 1856.

all the tissues were relaxed and flabby; and on placing my hands-which were very cold-over the tumour, I distinctly felt an increased rigidity of the walls of the uterus. The truth, indeed, appears to me to be this :that the uterus, in common with other hollow viscera, has, when enlarged through the presence of any substance in its cavity, a regular peristaltic movement, consisting in slight contractions and dilatations. Under the influence of the former the outline of the organ can be easily appreciated, other conditions being favourable; and these contractions are undoubtedly the more evident the greater the size of the womb, and the more it is irritated by external manipulation. But as it seems that the peristaltic motions occur whenever the uterine cavity becomes enlarged from any cause, it necessarily appears objectionable to instance such movements as a trustworthy sign of pregnancy.

A discoloration of the vagina, which is said to assume a dusky hue, has been proposed as a test of pregnancy by Dr. Kluge, of Berlin, and M. Jacquemin, The chief facts concerning this change are of Paris. as follows :- It is seldom clearly visible until the end of the third month, though, according to Kluge, it commences in the fourth week. The shade is commonly of a livid purple or port wine hue, very similar to the tint of the vaginal mucous membrane during menstruation: the colour is not always uniformly diffused, but often appears in patches: it can be distinctly seen about the clitoris and urethra, as well as on the inside of the nymphæ, though it is most strongly marked at the upper part of the vagina about the os uteri: it increases from the time of its appearance until the period of delivery, ceasing with the lochia:

and it is probably due to a general congestion of the capillaries. The value of this change of colour as a sign of pregnancy is rather impaired by the fact that pregnancy may exist without its occurrence; as well as by the circumstance that it is often present at the menstrual periods. Cattle breeders are so well acquainted with the latter fact, that they learn whether an animal is in heat or not by examining the orifice and inner surface of the vagina, which becomes almost black when the female is in a condition to receive the male. So again it has been found to exist in certain cases of hepatic disease, and in dropsy attended with general congestion of the abdominal viscera. Still, if this discoloration be present in a healthy female, in whom the menses have been absent for three or more months, it may be taken as almost decisive of the existence of pregnancy.

An examination of the blood might, in some doubtful cases, assist us in forming our diagnosis; since we know that this fluid undergoes the most remarkable changes almost directly the process of gestation commences. Firstly, the proportion of the globules diminishes at a very early period; this diminution continuing until the hour of delivery. If blood be drawn from a pregnant woman, a buffy coat will be formed, as in cases of inflammation; owing to the rapidity with which the corpuscles run together into piles or rouleaux, and sink below the surface of the liquor sanguinis before the coagulation of the fibrine commences. Secondly, the proportion of albumen is also sensibly diminished, though not to an equal extent with the globules. Thirdly, the fibrine undergoes a marked increase. And fourthly, as the result of the above alterations, there is a diminished density both of the blood and serum; while, if the changes proceed to a great extent, blowing murmurs will be audible on auscultation of the blood-vessels of the neck, and general cedema may result from the infiltration of the areolar tissue.*

Many other trivial signs have been alluded to by various observers; but none of them have individually much, if any value. One gentleman—Dr. Pollender—writing in 1845, says that during a practice of eighteen years, he has noticed a peculiar smell of the vaginal mucus to be a constant and unerring sign of pregnancy. The smell is musty, something like that of spermatic fluid or liquor amnii; and, after a vaginal examination, it cannot be mistaken for any other odour. In a great many cases of pregnancy, during the first, second, and third months, when the condition of the patient was doubtful, Dr. Pollender never, in a single instance, failed to make a correct diagnosis by means of this sign. According to his experience, the odour is perceptible as early as the eighth day of gestation.

In America, a physician has recently proposed to detect early pregnancy by the administration of small doses of ergot. The unimpregnated uterus gives no indication of the specific action of this drug; while the gravid organ almost invariably responds to its influence, as is evidenced by some uneasiness in the back, and by pain in the upper part of the thighs. These symptoms, it is said, are sufficient to establish the

^{*} Pathological Chemistry, in its application to the Practice of Medicine.
Translated from the French of MM. Becquerel and Rodier, by S. T.
Speer, M.D., p. 96. London, 1857.

diagnosis; and may be induced without any risk of injury to the mother or the ovum.

Stein, who wrote in 1770, taught that the most certain sign of pregnancy is to be found in the shape of the os uteri; which, from being a transverse fissure, assumes a circular form after impregnation. This assertion was propagated as true by most German writers on obstetrics for many years; but no one, in the present day, attaches the slightest importance to this imaginary change.

Dr. Osiander, of Göttingen, places some reliance on the detection of arterial pulsations at the upper part of the vagina, or on some point of the supra-vaginal portion of the uterus accessible to the finger. This vaginal pulse is due to the hypertrophy of the vaginal and uterine arteries which has resulted from fecundation.

Beccaria suggested as a test the existence of severe pulsating occipital headache; which is accompanied with giddiness on moving, and intolerance of light. The pain comes on suddenly, induces a disposition to sleep, and often passes away without aid from medicines; while it frequently assumes a periodic character. It is said to have been observed prior to the fourth month, in women who were not aware of its cause. However this may be, as a rule, we must allow, that although this peculiar pain may be an occasional concomitant of pregnancy, yet it is too rare and uncertain in its occurrence to bear any importance as a symptom of this condition.

Lastly, the general physical and moral changes which take place under the influence of pregnancy are regarded as symptoms by some practitioners. These gentlemen particularly insist upon the importance of

noting the sharpening of the features, and, indeed, of the whole body-excepting the breasts and abdomenwhich often occurs; the change of colour in the complexion; the darkening of mole-spots; the alteration in the entaneous secretion, so that those who have usually had a moist skin now find it harsh and dry, and the reverse; the existence sometimes of an unpleasant and rather powerful odour in the perspiration; the increase in the strength and frequency of the pulse; the numerous attacks of fainting which some women experience at this time, and at this time only; the frequent occurrence of varicose veins in the lower extremities; the antipathies, strange appetites, and longings for improper kinds of food which annoy certain women; and the distressing dreams which afflict a few, in consequence, probably, of a disordered condition of the alimentary canal acting upon an irritable temperament, The changes in the nervous system are sometimes well-Thus, there is often a peculiar alteration of marked. taste and disposition. Women naturally irritable and hasty become cheerful and contented, or vice versa; and many who are accustomed to habits of luxury and idleness now alter, and seem desirous to be active and industrious. One author cites a case where a lady during pregnancy possessed sound judgment but lost her memory; and who, after parturition, recovered her memory at the expense of her judgment. Another instance is recorded in which a female became-after an attack of inflammation of the brain-melancholy, pensive, and at length imbecile; but happening to get pregnant, she recovered her gaiety and regained completely the use of the intellectual faculties, though the improvement was only manifested during the time of gestation. After her labour she relapsed into her

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former miserable condition, until a second pregnancy occurred, during which the same phenomena were presented.-I have seen a case in which there was complete loss of voice during the last three months of gestation; but the lady was of a very peculiar temperament, and previous to her marriage had long suffered from hysteria. The aphonia continued for a fortnight after labour, when, under the stimulus of galvanism, recovery took place. So, again, women afflicted with deafness are said to have recovered and retained the sense of hearing during the time of gestation. Beer has related the particulars of a young Jewess, who at the commencement of each of her first three pregnancies became amaurotic, and continued blind till after her labours; but who subsequently bore children without experiencing this inconvenience. Many other such examples of amaurosis occurring during pregnancy are also known. But it is scarcely necessary to remark that these instances are all exceptional, and establish no general law. Hence it can only be said, as the result of the examination of a large number of women in different stations of life, that pregnancy very commonly exalts the general sensibility, and predisposes to the development of nervous disorders in all their Protean varieties.

CHAPTER III.

THE DISEASES WHICH SIMULATE PREGNANCY.

Spurious pregnancy: —Phantom, or muscular tumours.—2. Ovarian dropsy: —Dropsy of the Fallopian tube: —Acute inflammation of the ovary, ending in suppuration.—3. Ascites: —Dropsy of the amnion: —Great distension of the bladder.—4. Fibrous tumours of the uterus.

—5. Enlargements of the liver, kidneys, spleen, &c.: —Tuberculated disease of the peritoneum: —Fæcal accumulations: —Encysted dropsy of the peritoneum: —Cysts in the folds of the omentum, &c. —6. Hamatometra, hydrometra, and physometra.

THE diseases which may give rise to an unjust suspicion of the existence of pregnancy, are principally those that produce enlargement of the abdomen. The chief of these are :- 1. Spurious pregnancy : 2. Ovarian dropsy; 3. Ascites; 4. Fibrous tumours and large polypi of the uterus; 5. Enlargement of the liver, kidney, spleen, &c.; and 6. Distension of the cavity of the uterus with blood, water, or air. I shall make no remarks in this chapter on the diagnosis of hydatids in the uterus from normal pregnancy, because the subject will be subsequently treated of. Neither is it necessary, for the same reason, to speak of those curious cases where a woman with an extra-uterine fœtus in her abdomen, the result of a previous conception, again becomes pregnant, the child being then formed in the uterus.

Before proceeding to the separate description of the diseases above enumerated, let me urge upon the practitioner the necessity for always exercising great caution

and circumspection in their diagnosis; while, without assumption, I would remind him that it will be far better in any doubtful case to confess ignorance, than to run the risk of inflicting pain and misery on a defenceless woman, or of forfeiting his own reputation by giving an erroneous opinion. To be able to trace effects to their true causes is often a high proof of skill; but we all know that such ability cannot always be shown. In some cases the most experienced physician will have misgivings; hence, none need be so foolhardy as to descend to guess-work. He, however, who really desires to prove accurate will generally be so; since he will take care not to come to a positive conclusion without a careful review and calm consideration of all the circumstances of the case. He will weigh well all the data on which reliance can be placed; for, otherwise, though his judgment may be founded on what is apparently strong evidence, yet from not considering, or from being ignorant of, one or two small facts, the deduction is not unlikely to be wrong.

1. Spurious Pregnancy.—Should any of my readers entertain the idea that the symptoms of pregnancy are so peculiar and distinct that they can only be mistaken by the rash or ignorant, the perusal of this chapter will probably serve to undeceive them. An example of spurious parturition has been related in a preceding page; but in this case no opportunity was afforded me of examining the patient, until the close of the sham gestation. We shall now consider the subject in all its bearings, and it will at least be found that few disorders are met with in the practice of medicine more remarkable than this one of spurious, simulated, or pseudo-pregnancy—the fausse grossesse nerveuse, or

grossesse simulée par illusion pure, of French writers.* It serves to mislead not only old nurses and women who have given birth to several children; but so puzzling are many of its features, so striking is the resemblance which its symptoms bear to those of pregnancy, that the best-informed practitioners may be led into error by it, without the exercise of great caution.

To convey a clear notion of this matter, let it be imagined that we have before us a typical case. We shall find the following succession of phenomena, occurring possibly in a woman about forty-five years of age, the mother of a family, but who has not been pregnant for some six or eight years :- The catamenia have either ceased or become irregular, or the flow comes on at the proper period, but is very scanty; the abdomen began to swell from the pubic region, in the same gradual manner as in pregnancy, but the enlargement is seen to be more diffused when the patient lies on her back than it is in true pregnancy, and there is an appearance of unusual constriction around the lower ribs or over the diaphragm; the breasts have become painful and enlarged, blue veins are seen traversing their surface, the areola is darkened, and a serous fluid resembling milk is secreted, and escapes on pressure from the orifices of the milk ducts; the digestive organs have got disordered, there is a capricious appetite, a frequent sense of nausea with morning sickness, salivation, and diarrhœa alternating with constipation; there is muscular debility, an excitable condition of the nervous system, cramp, and retraction of the leg, with a change in the hue

^{*} Dr. Mason Good speaks of this extraordinary affection under the term of pseudocyesis, from ψευδος, a lie, and κύησις, pregnancy. This Greek name, however, has no advantage over the plain English employed in the text.

of the skin; the veins of the lower extremities have become varicose; and the patient is sensible of movements in the abdomen, which she asserts can only be those of a live fœtus, though if closely questioned she will allow that they are not altogether identical in character with such as she has felt on occasions when really preguant. As these movements are at least partially due to the passage of flatus from one portion of the intestine to another, they are appreciable by a second party, who therefore confirms the patient in her erroneous views. If the phenomena here presented persist, the spurious gestation will probably be succeeded by a spurious parturition; and strong labour pains may come on, possibly attended by all the peculiar symptoms which may have characterized a previous lying-in. In short, the illusion will be complete; and will be kept up until the man of science steps in and dispels it by showing that the uterus is empty, and that the phenomena are simply of constitutional origin.

Spurious pregnancy is by no means an unfrequent disorder. The unmarried, and such as have never borne children, are liable to be affected with it, as well as the mothers of families; though the latter suffer from it more frequently than the former. It may occur early in married life, or about the climacteric period, when women so commonly present complex nervous and constitutional symptoms.

The difficulty of diagnosing this condition is increased by the curious fact that women who have suffered from remarkable idiosyncrasies in previous normal pregnancies have them repeated during spurious gestations. I have seen a lady who had been pregnant three times, and on each occasion had suffered from chronic urticaria of a very rebellious nature. When

she came under my care with symptoms of spurious pregnancy, she was likewise afflicted with this eruption. A monthly nurse, who gave evidence on the Gardner peerage trial, asserted that she could always calculate the date of her labour, inasmuch as she invariabl. -ainted when quickening took place. She afterwards applied to Dr. Reid to be attended in her confinement; stating that she was seven months advanced in gestation, that she had fainted as usual on quickening, and that she felt the movements of the child. Yet, on a careful examination, it was discovered that her symptoms were merely due to spurious pregnancy.-Dr. Simpson relates a curious case, where a lady, who had previously given birth to eight children, passed over one catamenial period, and imagined that she had again fallen in the family-way, because the breasts enlarged and began to secrete milk, the abdomen became prominent, and she felt movements resembling those of a fœtus. On examination the uterus was found to be perfectly normal, except that there was slight ulceration around the os; but the lady was firmly convinced of her pregnancy. because she lost great quantities of hair, and she had always had such a falling off of the hair in her previous pregnancies.

The mode in which these cases terminate varies. Sometimes, after the symptoms have persisted for some few months, they suddenly disappear, and the patient at once gets well; an occurrence which happens most frequently in women who have never borne children. In other instances the symptoms continue for ten, twelve, or twenty months; and, in fact, do not cease until the employment of proper remedial measures. While, in a third class, the spurious pregnancy is succeeded at the end of nine months by the phenomena of a spurious par-

turition; this termination being more rare than either of the others.

To prevent the possibility of a suspicion that in the foregoing remarks an exaggerated view has been taken of this freak of Nature, the reader's attention is requested to a few of the most interesting examples of spurious pregnancy which are scattered through our medical literature. We shall find that more than two centuries ago the illustrious Harvey, in his work on parturition, attempted to prevent his readers from being deceived by "erroneous tokens of pregnancy;" and he enforces his precepts by the relation of the two following cases: *- "I am acquainted," he says, " with a young woman, the daughter of a physician with whom I am very intimate, who experienced in her own person all the usual symptoms of pregnancy. After the fourteenth week, being healthy and sprightly, she felt the movements of the child within the uterus, calculated the time at which she expected her delivery, and when she thought, from further indications, that this was at hand. prepared the bed, cradle, and all other matters ready for the event. But all was in vain. Lucina refused to answer her prayers; the motions of the fœtus ceased;

^{*} Harvey also notices in the Essay on Conception, the occurrence in animals of phenomena similar to those we are here considering. "Overfed bitches, which admit the dog without fecundation following, are nevertheless observed to be sluggish about the time they should have whelped, and to bark as they do when their time is at hand; also to steal away the whelps from another bitch, to tend and lick them, and also to fight fiercely for them. Others have milk or colostrum, as it is called, in their teats, and are, moreover, subject to the diseases of those which have actually whelped; the same thing is seen in hens, which cluck at certain times, although they have no eggs on which to sit; some birds also, as pigeons, if they have admitted the male, although they lay no eggs at all, or only barren ones, are found equally sedulous in building their nests."—The Works of William Harvey, M.D., Sydenham Society's Edition, pp. 528 and 576. London, 1847.

and by degrees, without inconvenience, as the abdomen had increased so it diminished. She remained, however, barren ever after.—I am acquainted also with a noble lady, who had borne more than ten children, and in whom the catamenia never disappeared except as the result of impregnation. Afterwards, however, being married to a second husband, she considered herself pregnant, forming her judgment not only from the symptoms on which she usually relied, but also from the movements of the child, which were frequently felt both by herself and her sister, who occupied the same bed with her. No arguments of mine could divest her of this belief. The symptoms depended on flatulence and fat."

Sydenham, Mauriceau, Lamotte, and others also allude to or record instances of nervous pregnancy; but neither the cases nor the observations possess any special interest, beyond showing that these authors were well acquainted with the subject. M. Russel, of Vars, met with a remarkable case, from the published narrative of which the chief particulars are selected.* They are as follows:—

Mary Gibaud, residing at Vars, department of the Charente, enjoyed good health prior to marriage at about thirty years of age. Shortly after this epoch, she apparently became pregnant. The menses ceased, nausea and morning vomitings occurred, the abdomen enlarged, the motions of the foctus were felt, or supposed to be felt—in short, every symptom of pregnancy was present. At the end of nine months labour pains commenced, and went on increasing for 36 hours, but without causing any enlargement of the os uteri. The midwife, unable to make out the case, called in a surgeon of great reputation. At the moment of his arrival, the patient had just fainted from a considerable uterine hæmorrhage, and the surgeon quickly proceeded to deliver. He was not a little surprised to find the uterus in an unimpregnated state. On recovering from syncope, the labour pains had gone, but in two or three hours returned as violent as ever. These were relieved by copious bleeding, and the patient recovered;

^{*} The Medico-Chirurgical Review, New Series, Vol. I., p. 495. London, 1824. The paper is quoted from the Gazette de Santé, for January, 1824.

but at the end of a month she again had symptoms as if she had become pregnant, and went for another nine months, until labour pains set in as before. A third time this happened, and she was then treated for dropsy. Paracentesis abdominis was performed, but no fluid came away. She recovered, and lived for twenty years; having all the symptoms of pregnancy, her breasts being always gorged with milk, and every nine months a kind of attempt at parturition taking place, which was only relieved by loss of blood. She died in the 51st year of her age, from phrenitis; and on examining the abdomen every organ was found healthy, but there was a considerable quantity of fat in the omentum.

The Cæsarean operation was performed on a patient at Berlin, in August, 1828, by Professor Dieffenbach, at the desire of Dr. Heim; who, with many other eminent physicians, had diagnosed the existence of extrauterine gestation.* The woman was twenty-one years of age, and had experienced most of the symptoms of pregnancy, but especially she asserted that she felt the movements of the child daily. When the time calculated on for delivery was past, and she had spent some days of suffering from the periodical recurrence of violent pains, the abdomen was opened. To the amazement of all present, not only was no child found, but not even a tumour of any kind. Dr. Heim states that he introduced his hand into the abdominal cavity, and detected nothing from which he could have inferred the existence of a fœtus. Fortunately, the wound healed completely in three weeks, and finally the patient recovered, though the operation was not the only source of danger; for during her illness she lost upwards of sixty ounces of blood in four venesections, had two hundred leeches applied to the belly, and had ice-cold applications day and night.

Dr. Gooch relates the following case. + He says :-

^{*} Dr. Ernest Ludwig Heim's Vermischte Medicinische Schriften, p. 402. Leipzig, 1836.

⁺ An Account of Some of the Most Important Diseases Peculiar to Women. By Robert Gooch, M.D. Second Edition, p. 220. London, 1831.

"I was introduced by an eminent physician to a very young married lady, for the purpose of attending her in her approaching confinement, of which her projecting abdomen gave visible intimations; and I was directed to call on her occasionally, that she might become accustomed to me before the time for my attendance arrived. During these calls I learnt gradually the particulars of her marriage. She had been attached to a young man, her equal in station, but so profligate that her parents forbade him the house; nevertheless, the lovers continued to meet by stealth, and one fatal evening they became as man and wife in all but the marriage ceremony. After this intercourse had been going on a few months, the young lady observed that her belly was enlarging. It was at length noticed by her mother. This led to an inquiry, and the young lady confessed all. The discovery of course produced a great uproar in the family: her parents agreed that, as the young couple had gone so far, it was absolutely necessary that they should go a little further. The lover was called upon ; and, as the young lady had brothers who understood the use of the pistol, the young couple were soon married and placed in furnished lodgings. It was at this period when I was first introduced to them. I continued to call on the bride for some time; but, after two months, I one day remarked that although she still continued large, she was not larger than when I first saw her. When I pressed the abdomen it had not the firmness of preg-nancy, and she felt no internal motions. When I inquired about her menstruction, I was told that she had never menstructed in her life; menstruation had not ceased, simply because it had never begun. I now expressed strong suspicious that she was not pregnant, and advised the question to be settled by an examination. It was so. I found the umbilicus sunk, the abdomen distended by a soft flatulent tumour; the neck of the uterus of its full length, its body not in the slightest degree enlarged. I told my patient and her sister that she was not pregnant, but they would not believe me, and directed a consultation with the same eminent physician who had introduced me to them. He met me; and as he was one of the very few medical physicians who are expert at vaginal examinations, he was soon as well satisfied as myself that the young lady was not pregnant. The communication caused great disappointment in the family, but in no one so much as in the young husband, whose rage was boundless at discovering that he had been compelled to marry her on a false supposition.

The particulars of a well-marked case were communicated to Dr. Montgomery by Dr. Labatt. A lady who married rather late in life, and remained some years without conceiving, at length had suppression of the catamenia; from which, and other symptoms, she deemed herself to be pregnant. She increased in size, and at the expected time pains came on, which were considered as those of labour; in consequence of which she sent for her medical attendant, who concurred in the opinion of her being parturient, and remained with

her. At the end of forty-eight hours, as the pains continued severe, Dr. Labatt was called into consultation, in order to determine whether she ought not to be delivered with instruments. The gentleman in attendance was doubtful as to the best instruments to apply; remarking, that he was unwilling to use the crochet, because he felt sure that the child was alive, having applied the stethoscope several times during the night, and detected the pulsations of the fœtal heart. Dr. Labatt, having examined carefully, suggested that there was no necessity for the use of any instrument, as the lady was not in labour; and for the best of all possible reasons, because she was not pregnant. This proved to be the truth.

Dr. Keiller related to the Obstetrical Society of Edinburgh, in March, 1850, the history of a hysterical young woman, nineteen years of age, who-from the large size of the abdomen, and the occurrence of pains which caused such cries that the whole neighbourhood was disturbed-was considered by her friends to be suffering from a difficult labour. Her supposed labour had continued for a fortnight, when an irregular practitioner who was in attendance, proposed performing the Cæsarean section as a last resource; since he found the bones of the pelvis so grown together, that the child could never be born in the natural way, dead or alive." When Dr. Keiller saw her, and made a careful examination, he tried in vain to disabuse the minds of her relations of the idea that she was pregnant. A variety of plans of treatment was instituted, but without any marked benefit; indeed change of air was the only thing that seemed to do her any good. After one of these removals, she was able to return for a short time to her usual employment at a mill, though her abdomen always remained

of a large size. Dr. Keiller then lost sight of her for eight years, when she presented herself in Edinburgh, with a child that she had really had in the interval, complaining that all her old symptoms were reappearing. Her abdomen was very large and tympanitic; but on putting her under the influence of chloroform it immediately became flat, and the uterus was felt to be of its normal size. When the effects of the chloroform passed off, the abdomen again enlarged in size, and resumed its former bulk. The enlargement continued for some months, during which she was under observation; but I am not acquainted with the final result.

The last instance which will be referred to, is one which occurred in the practice of Dr. Simpson, who mentions that he was one day summoned in great haste to a patient at the Maternity Hospital of Edinburgh. The case was reported by the house surgeon-a gentleman of remarkable acuteness-to be one of placenta prævia, requiring the operation of turning. The woman had the phenomena of labour present, with severe menorrhagia; but there was no child to turn, as she was not pregnant.

The question now naturally arises-What is the nature of the abdominal swelling in this affection? It was long thought that the symptoms of spurious pregnancy were due simply to the distension of the intestines by flatus, and the excessive deposition of fat in the abdominal integuments and in the omentum. We are told that on examining the body of Joanna Southcott after death, the womb appeared smaller than natural, free from disease, and containing neither "the promised Shiloh, nor any other fœtus." But the walls of the abdomen were four inches thick from fat, the intestines were distended with gas, and the omentum

was one large mass of fat. Very possibly the combination of these conditions may alone have sufficed to produce the disorder in other instances; but without a doubt, in the majority of cases, there is something more. This additional something is probably irregular or excessive action of the diaphragm and other abdominal muscles, by which the intestines are forced low down in the cavity of the abdomen. In many instances, also, it has been thought that irritation or chronic inflammation of one or both ovaries existed: this irritation producing contraction of the muscles by reflex action. Again, it has not unfrequently been found that the patient was suffering from retroversion or retroflexion of the uterus. The chief evidence which can be offered in support of the hypothesis here given is, that in the first place, in two marked examples, a long tube was passed per anum, but not a bubble of air was found to escape from the nozzle, which was held under water, though as the patients became insensible from the inhalation of chloroform, the enlargement disappeared; secondly, that positive symptoms of ovarian or uterine irritation are often present, especially pain on pressure over one iliac region, irregularity or suppression of the catamenia, intense backache, and pain extending down one leg, with, perhaps, retraction of the limb; and thirdly, that if the patient be slowly, but thoroughly placed under the influence of chloroform, the abdomen will be seen to flatten, and the tumour to entirely subside, the latter slowly melting away in proportion as the anæsthetic relieves the diaphragmatic and abdominal muscles from the influence of the reflex nervous action. As consciousness returns, however, the muscles become tense and prominent, and the swelling gradually forms again; until the

tumour is found possessing all its original characters, by the time the anæsthesia has completely passed away. In some hysterical young women, the seeming enlargement may be, perhaps, caused by a great arching forward of the lower dorsal and upper lumbar vertebræ; in which instances the spine becomes straightened on anæsthesia being induced. Whatever may be the cause, however, in any particular case, if additional evidence be required that the tumour is not formed by the pregnant uterus, it will be found in the fact that there is generally resonance on practising percussion over the abdomen, though this test is often rendered uncertain by the deposition of fat in the abdominal walls or in the omentum, or by the existence of great tenderness, rendering a satisfactory tactile examination almost impossible; that the uterus, on examination per vaginam, can be discovered small in size, and with its body undeveloped; and that none of the auscultatory phenomena of pregnancy can be detected.

The cure of spurious pregnancy, though difficult and sometimes tedious, is not beyond the reach of our art. At the commencement, when symptoms of ovarian or uterine irritation are manifested, they must be relieved by the administration either of the bromide or the iodide of potassium, by baths, by the use of sedative injections, or by the introduction into the vagina of ointments containing belladonna, or conium, or henbane. A very efficient medicated pessary, which may be used every night at bedtime, can be made by mixing together four or five grains of the extract of belladonna, two grains of the extract of opium, from five to ten grains of white wax, and about a drachm and a half of lard. If thought advisable, one scruple or half a drachm of the strong mercurial ointment may also be added. At the same time all

mental anxiety is to be relieved, by impressing the patient with the conviction that she is not pregnant, and that she will get well: while, should she insistas she is not unlikely to do-that if she has not a child within her, there is certainly a live animal of some kind, the delusion must be got rid of by gentle reasoning. It will often, also, be useful to place her under the influence of chloroform; and, while she is in a state of anæsthesia, to show her flattened abdomen to her mother, or some confidential female friend. The general health, moreover, is to be improved by a course of mild tonics, and by change of air: any sympathetic vomiting which may be present is to be relieved by the administration of ice, or drinks impregnated with carbonic acid gas, or bismuth and morphia, or especially by giving one or two grains of the oxalate of cerium three or four times a day: if the patient be troubled with flatulence ten grains of the compound galbanum pill given twice a day will most probably relieve it, especially if at the same time the abdominal walls be supported by a bandage: the condition of the abdominal viscera and their secretions should be particularly attended to: any marked excitability of the nervous system is to be suppressed by administering such antispasmodics as musk, galbanum, or assafætida; and the abdominal muscles themselves ought to be strengthened and their irritability diminished by the application of galvanism, together with the frequent employment of gentle friction.-It has been before remarked that the terms spurious or pseudo-pregnancy are very unsatisfactory; for it is clear that they convey no notion whatever of the nature of the disorder. But I think the foregoing observations will show that we are not at present in a position to suggest a better name for this affection;

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since the phenomena produce symptoms which seem at present to defy any exact nosological arrangement.

Allied closely to cases of spurious pregnancy are those remarkable instances in which we find a contraction or relaxation of the abdominal muscles, simulating a simple but well-defined tumour. These phantom or muscular tumours vary in size from a cricket-ball to an adult head; they may be stationary, firm, and unyielding, or they may change their relative position from day to day, or they may be movable, as if attached by a long pedicle; they may be insensible to the touch, or acutely tender; and they sometimes temporarily melt away under steady and prolonged manipulation, or they disappear for a long period and then return, or they remain persistent for years. Occasionally, moreover, it can be clearly distinguished that they have their seat in the parietes, and then especially there is resonance on percussing over them. In their diagnosis care must be taken not to mistake these tumours for movable kidneys. It is well known that occasionally both the renal organs present an unusual degree of mobility; or one kidney may be movable to a considerable extent, while the other is stationary. So also a spleen displaced downwards may form a palpable tumour, as low as the left iliac region; and should there also happen to be any displacement of the pancreas, a very puzzling enlargement will result.

Patients in whom phantom tumours are found are generally in bad health; being often anæmic, and presenting phenomena which are commonly set down as due to hysteria, or to "spinal irritation." They are also not unfrequently afflicted with neuralgic pains; and are sufferers from leucorrhæa, dysmenorrhæa, and

constipation. They usually experience great mental uneasiness and depression about the swelling, which is, indeed, often the cause of their seeking advice. Happily, however, these spasmodic contractions or relaxations of portions of the recti or obliqui muscles need give rise to no anxiety on the part of the physician; since they may be readily dispelled by curing any uterine or ovarian disease, if such be present, and then by improving the general health. In other words, remedies which induce a natural performance of the uterine functions,-ferruginous tonics, galvanism, small doses of nux vomica, galbanum, mild aperients, good diet, and sea air, will remove this tendency of Nature to feign, as it were, serious disease. The only danger that can arise is from these shams being mistaken for dangerous morbid growths, when a formidable plan of treatment is not unlikely to be proposed. It is rather painful to know that such mistakes have not unfrequently been committed. In the statistical account of eighty-one cases of ovariotomy collected by Mr. Benjamin Phillips, it is shown that in as many as five instances no tumour at all was found upon cutting into the abdomen; * and at least two more such instances have occurred since this report was published. The most remarkable instance of this error with which I am acquainted, is that recorded by Mr. Lizars, the chief features of which are as follows:-In the year 1821, this gentleman was called to see a woman with an abdomen as large as at the ninth month of pregnancy. On examination the whole abdominal cavity appeared to be occupied with a tumour, which seemed to roll from

Medico-Chirurgical Transactions, Vol. XXVII., p. 468. London, 1844.

side to side. The uterus per vaginam felt natural, and the catamenia had been regular, but attended with pain. She was 27 years of age, had borne one child, and had had one miscarriage. The enlargement commenced towards the end of 1815, and a few months afterwards she consulted numerous medical men, who said she was pregnant. Several of the principal practitioners of Edinburgh afterwards saw her with Mr. Lizars, and all agreed that there was disease of one or both ovaries. As the pain was intolerable, it was decided to remove the tumour, and accordingly, on the 24th October, 1823, Mr. Lizars made a longitudinal incision through the parietes, parallel with the linea alba, from about two inches below the ensiform cartilage to the crest of the pubes. Having thus freely opened the abdominal cavity, he proceeded to examine the state of the contents; when, to the astonishment of all present, the diaphragm was seen to be acting with "great vigour and powerful impetuosity," but no tumour could be found, for none existed. Fortunately the patient recovered.* In any similar case, or, indeed, in any instance in which the practitioner is doubtful whether he has to deal with a true abdominal tumour, or with only a phantom, the exhibition of chloroform will decide the question; for muscular action, whether it simulate pregnancy or a morbid growth, is temporarily annihilated by the inhalation of this agent.

2. Ovarian Droffy.—The diagnosis of this disease is by no means so easy as the physician might imagine from examining a well-marked case. Numerous errors

^{*} Observations on the Extraction of Diseased Ovaria. By John Lizars, p. 6. Edinburgh, 1825.

are even now daily made in practice, if I may judge from my own experience. I might almost say that it has happened to me, as a rule, that when consulted for what has been termed an ovarian tumour, I have found the enlargement of the abdomen to be due either to ascites, or to the presence of a fibrous tumour of the uterus, or to be caused by pregnancy. In the celebrated case of Mademoiselle Famin, published by Valentin at Berlin, in 1768, a charge of concealed pregnancy and child-murder was erroneously instituted, in consequence of an extreme case of ovarian dropsy.-Dr. Gooch relates that a woman was taken into the operating theatre of an hospital to be tapped for a supposed dropsy of the ovary. The surgeon, however, finding that she had not been carefully examined, sent her back to the ward; a precaution which was by no means superfluous, since she brought forth a child before the next operating day.—Dubois mentions that he has seen a female become pregnant two years after the cessation of the catamenia. The woman finding her abdomen enlarging, and mistaking the cause, entered the medical department of an hospital; and so little idea had the physician, whose care she was under, that she was pregnant, that he actually delivered a clinical lecture on the case, as being a well-marked example of ovarian dropsy. On examination, Dubois distinctly heard the fœtal heart, and soon afterwards labour supervened.*—And lastly, Dr. Simpson, in his clinical lectures, alludes to an instance where, some thirty years ago, a female with enlargement of the abdomen was supposed to be the subject of an ovarian tumour by several gentlemen, who all concurred in the propriety of, and necessity for, performing the operation of

^{*} Journal de Médecine et de Chirurgie. Paris, May, 1850.

ovariotomy. The day was fixed, and everything prepared for removing the tumour by the abdominal section, when fortunately the patient saved herself all the horrors and dangers of the operation by giving birth to a child a few hours beforehand; thus dispelling most satisfactorily and efficiently the supposed morbid growth.—Even more painful, and much more recent examples might be quoted; but it is hoped sufficient has been said to put the medical man on his guard, to teach him that the diagnosis is often difficult, and to prevent his giving a hasty opinion in any particular instance.

An ovarian tumour may consist of a single cyst, or of numerous cysts enclosed in a parent cyst, or of solid matter. The latter are comparatively rare; for of all these tumours ninety-five per cent, will be found to consist originally of cystic growths. The simplest ovarian cysts are formed by enlargement of one or more Graafian vesicles; their walls consisting of three coats,-i.e., peritoneum, fibrous capsule of ovary, and the greatly thickened wall of the vesicle itself. The multilocular tumours probably depend upon the formation of adventitious cysts; in other words, they are the result of entirely new growths. Ovarian cysts may contain a pale amber-coloured fluid like urine or the fluid formed in ascites, or a dirty chocolate-like fluid, or a thick glairy gelatinous matter, or a quantity of fatty substance mixed with hair, teeth, or small bones. Ovarian tumours are more common in married than in single women; for of 136 published cases, 88 occurred in the married, 37 in the single, and 11 in the widowed. It is very probable that they are commonly associated with sterility, though it must not be imagined that the disease necessarily prevents impregnation. They happen most frequently between the ages of 20 and 35; though I have seen an ovarian tumour taken from the body of an infant who died of peritonitis, and have had patients afflicted with this disease who were more than 55 years old. They vary very much in size. In the infant just mentioned, the cyst was about the size of a hazel nut; while in the museum of the College of Surgeons is a preparation showing a single cyst which measures four feet in circumference in one direction, and three in another. Very frequently the abdomen, much distended, is found apparently quite filled by the growth. It is a common opinion, that ovarian cysts run their course slowly; whence Dr. Gooch asserts that the duration of the tumour, always much beyond nine months, is alone a sufficient guide for diagnosis. This opinion is in all probability erroneous. From a careful examination of the question, I believe that if we were to collect the histories of 500 patients, we should find that about 170 had died before the end of the first year, 120 more before the completion of the second, 75 more before the termination of the third, about 50 more before the end of the fourth, and 75 more before the completion of the tenth, leaving some 10 alive at the end of ten years. It is certain also. that the growth of the mutilocular tumours is much more rapid than of the unilocular cysts. The causes of ovarian dropsy, as assigned by the patients themselves, increase the difficulties of diagnosis; for we find that in a large proportion of cases this disease is attributed to the excitement of marriage, or to sudden suppression of the menses. It has also been thought to be due to parturition, to abortion, to exposure to cold, to disappointed affection, and to falls or blows.

The diagnosis of a cystic ovarian tumour, as before mentioned, is often attended with difficulty. In the early period, when the tumour is confined to the cavity of the pelvis, the patient seldom seeks advice; since she is either unaware of the existence of any morbid condition, or, if she experience some slight inconvenience, she deceives herself as to its cause. this stage, however, if an examination per vaginam be made, a tumour, varying in size from a hen's egg to a large orange, will be discovered on one side or other of the uterus; while the vagina will be found elongated, and the os uteri drawn upwards, and towards the affected side. At the same period inspection of the abdomen will detect the existence of a certain amount of fulness on one side of the hypogastrium, or in one of the iliac regions. As the enlargement increases, the abdominal swelling becomes more symmetrical, so that when the tumour has reached the umbilicus, it is often somewhat difficult to decide whether one side of the abdomen presents any greater prominence than the other. Many practitioners imagine that an ovarian tumour always occupies the side on which the disease is situated, while the pregnant uterus has its centre as constantly in the median line: but neither of these propositions are absolutely correct. With respect to the first, it may be allowed that in many instances the most prominent side of the abdomen is that to which the diseased ovary belongs: but in the majority of cases, as before remarked, the tumour is centrally placed, while in some few it happens that the side opposite to the disease is the most prominent, owing to the morbid structures falling over to it. In unilocular cysts, too, the enlargement is always more even, rounded, and symmetrical than in the multilocular varieties; so that the diagnosis between such cysts and ascites is frequently very difficult. As regards the second opinion, the exceptions to its

truth are rare; though such cases as the following show that they sometimes occur.

In the early part of April, 1858, I was consulted by a married lady, forty-one years of age, the mother of three or four children, who was supposed to be suffering from cystic disease of the right ovary. She was in a very bad state of health, the catamenia had long been irregular, and her youngest child was nine years The tumour occupied almost entirely the right old. inguinal and right lumbar regions, and communicated to the touch the sensation of a multilocular cvst, with gelatinous contents: but on applying the stethoscope, the fœtal heart was, after a little trouble, distinctly detected, beating at the rate of 130 a minute, while the maternal pulse was 90. As the fœtal pulsations were not audible to the gentleman whomet me in consultation. I am not sure that the diagnosis which was given was credited; but the truth of the opinion was proved by the patient's miscarrying at the end of the following month, The only reason which could be assigned for the unusual site of the uterus was that the lady had suffered from hemiplegia for a few years, and while confined to her bed had constantly rested on the back and right side; and so thoroughly, though gradually, had the uterus become accustomed to its unusual situation, that no change of posture on the part of the patient affected its position.

A small ovarian tumour is more likely to be mistaken for a fibrous tumour growing from the side of the uterus, or for an abscess in the broad ligament, or for an extra-uterine gestation, than for the pregnant uterus. But the former may often be distinguished by the feeling of great elasticity, hardly amounting to fluctuation, communicated to the touch on making a vaginal examination; by the facility with which the sound can be passed into the uterine cavity, and the manner in which the uterus can be perceptibly moved away from the tumour, and independently of it; by the non-existence of those constitutional symptoms which arise from inflammation ending in suppuration; and by the absence of those inequalities of surface which are produced by the different parts of the fœtus. The history of each case, and the duration of the symptoms, will also afford material help in forming the diagnosis: though I have seen recent cases of ovarian dropsy where there has existed suppression or irregularity of the catamenia, morning nausea and vomiting, indigestion, troublesome constipation, irritability of the bladder, a sense of movement in the abdomen, and swelling with tenderness of the breasts.

The chief diagnostic marks of an ovarian tumour which has attained a large size are the following :- The abdomen is found more or less completely occupied by the morbid growth, the enlargement being smooth and rounded without any prominences when the disease is of the unilocular variety, but often very uneven in the multilocular form. A practitioner has been known to confidently assert that the limbs of a child could be distinctly felt through the parietes when there was only an ovarian tumour causing considerable inequality of surface. In the erect posture as well as in the supine, the tumour projects forwards, the flanks being undistended. In the multilocular, more commonly than in the unilocular tumour, the superficial veins coursing over the abdomen are found enlarged; and it has been thought by some observers that the vessels on the side corresponding to the diseased ovary are generally the most distended. This observation, however,

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I have not been able to confirm. Pressure with the hand on the tumour communicates a sensation of great resistance; this resistance being most equable in the case of the unilocular disease, though it is almost the same in the multilocular tumour when there are large cells. Fluctuation is always very distinct when there is only one cyst; being of course more imperfect and obscure when there are several, and no single one of great size. Unless the morbid growth is very large and projects into the loins, or unless ascites co-exists, fluctuation will not be detected in the flanks. The more viscid the contents of the cyst, the more obscure will be the fluctuation, as a general rule; and the same remark holds good when the cyst walls are very thick. The pulsations of the aorta are sometimes communicated to the hand laid over the tumour. Percussion elicits a dull sound over the whole of the tumour, the only exceptions being, when a coil of intestine passes between the tumour and abdominal wall, as it sometimes does just above the pubes; or when the cyst has been tapped, and has afterwards filled with air; or when a cyst has emptied itself into the intestine, and flatus has passed from the latter into the former. The dulness is uniform over the mass of the tumour, and its note is not affected by change in the posture of the patient; but there is resonance above the tumour, and in the lumbar regions where the intestines are found. By auscultation a murmur is sometimes heard in one or both iliac regions, owing to pressure exerted by the diseased mass upon the iliac arteries; but otherwise only information of a negative kind is gained, there being an absence of borborygmi, and of the sounds produced by pregnancy. Cysts of moderate size, when free from adhesions, do not modify the respiratory movements; but when large they restrain the descent

of the diaphragm, and especially do they do so when they are adherent. A non-adherent cyst will usually descend to the extent of an inch during inspiration. Dyspnœa and even orthopnœa are present when the tumour has acquired a large size. Some stress is laid by many authors upon the fact of the gradual emergence of the umbilicus during pregnancy, this emergence increasing until the depressed portion of the navel gets on a level with the integuments. But the same thing happens in large ovarian tumours, as well as in ascites; and, in fact, in every case where the abdominal walls become greatly distended. Although in the early stages of ovarian dropsy the patient will generally be found in the enjoyment of good health, yet, as the distension increases, her constitutional powers gradually fail. the end of no long period she complains of a bearing down and sense of weight in the pelvis; of constipation, hæmorrhoids, and throbbing in the fundament; and of a deep-seated pain in the groins. There is also cedema of the lower part of the abdomen, vulva, thighs, and legs; numbness of the lower extremities, especially on the affected side; suppression of urine, more or less complete, from the pressure upon the kidneys; and increasing debility, ending in exhaustion and death.

Dropsy of the Fallopian tube is rather an uncommon affection. The fimbriated extremity of this canal, together with the uterine orifice, occasionally get obliterated from the action of chronic inflammation. In such a case the portion of the tube between the openings sometimes becomes the seat of an accumulation of pus or of serous fluid; and instances are recorded where an hypertrophied Fallopian tube has alone weighed seven pounds, and has contained twenty-three

pints of fluid. The diagnosis of this disease from a simple ovarian cyst is exceedingly difficult, if not generally impossible; but only an inexperienced observer could confound the abdominal enlargement produced in such a case with that due to pregnancy.

Acute inflammation of the ovary, ending in suppuration, is a rare disease, which could hardly be mistaken for pregnancy. The tumour formed by the abscess, however, may acquire a great size; a case having occurred to Kiwisch where the cyst contained fifteen pints of pus. Such instances must not be confounded with those cases of ovarian dropsy in which the contained fluid is formed almost entirely of pure pus; this secretion being the result of acute inflammation of the cyst wall.

The fact that pregnancy may co-exist with ovarian dropsy must not be forgotten; since it is a combination which may materially obscure the diagnosis. Many women have conceived and brought forth children after an ovarian tumour has manifested itself; and several cases are now known where the same has happened after extirpation of the disease. When both ovaries are affected, pregnancy is, of course, much less probable, yet it has occurred; for there is no reason why we should not believe with Morgagni, that a woman may conceive if there only remain so much of one ovary sound as belongs to a single mature vesicle. Mr. Hewlett* has recorded an extraordinary case in

^{*} Medico-Chirurgical Transactions, Vol. XVII., p. 226. London, 1832.

which a lady, with most extensive double ovarian disease, was delivered, after a very difficult and tedious labour, of a putrid child. She died ten days subsequently, and at the post mortem examination it was found that both ovaries were converted into large malignant tumours. The left gland was so large that it ascended from the left iliac fossa to the diaphragm; while the right tumour entirely filled the hollow of the pelvis. In the diagnosis of pregnancy under such circumstances, the points on which to rely for forming an opinion must be the history, the appearances induced in the mammary areola, the possibility perhaps of obtaining evidence by ballottement, and the audibility of the uterine murmur and fætal heart.

3. Ascites. - The signs and symptoms of this disease are generally so characteristic, that there would seem to be some difficulty in mistaking the abdominal enlargement which it produces for that due to any other cause. Yet errors in the diagnosis of ascites are not very uncommon: and cases similar to the following may perhaps occur even in the present day. Francis Mauriceau relates that about the year 1654, being in the city of Saumur, there was near his lodging a young and very handsome daughter of a citizen, who was five whole months under a physician's and apothecary's hands to be cured of a dropsy which she complained of. "At length after she had taken many violent remedies they had ordered her, she was cured in a moment, by bringing forth a child at its full time, notwithstanding all they had given her; which much astonished the physician and apothecary, to be so grossly deceived, in trusting to the maid's relation, who counterfeited the dropsy so well, that they could never perceive the truth till she was brought to bed."*

On examining a case of ascites, in which the quantity of fluid effused is abundant, a general fulness of the abdomen will be noticed. If the patient be standing upright, the fulness will seem to be most prominent below the level of the umbilicus; but on lying down the abdomen will become more flat, while both the flanks will bulge outwards. When placed on one side, the lowermost part will exhibit the greatest prominence. Supposing the quantity of liquid to be excessive, there will be found to be general abdominal enlargement, uninfluenced by the posture assumed: while the abdomen will also appear to encroach considerably on the thorax, and the xiphoid cartilage with the cartilages of the lower ribs will be found much everted. The veins of the parietes are generally also prominent and dilated, a condition which is often due to obstruction of the vena porta; and when this great effusion is caused by structural disease of the liver, it is often associated with a certain amount of jaundice. By practising palpation some very characteristic signs will be discovered. The great evenness of the enlargement, together with the sense of resistance and weight which is experienced on pressing the hand towards the spine, will first excite attention. Then the evident sense of fluctuation communicated to the fingers arrests attention; the waves being finer, and following more or less quickly upon the impulse, in proportion as the distension is great, and the fluid serous or of a watery consistence. Œdema of the abdominal wall, or the presence of much fat, obscures this last sign. On per-

^{*} Opus jam citat. p. 19.

cussing over the higher portion of the belly, there is generally produced a resonant sound, owing to the floating of the intestines; although occasionally only dulness may result if the distension be great, and the breadth of the mesentery insufficient to allow the intestines to reach the surface of the fluid. By making the patient stand upright, we can trace the height to which the fluid reaches, and thus roughly estimate the quantity present; dulness existing over the part occupied by the effusion, and resonance above. If the patient be on her back, the resonant intestines are commonly found grouped around the umbilicus, while the flanks are dull. By placing the woman on one side, the uppermost flank is made resonant, and the lowermost dull. In the differential diagnosis of ovarian dropsy, ascites, and pregnancy, one sign-percussion of the lumbo-lateral region-is worthy of recollection. If, in a case of ascites in which the distension is so great that the hydrostatic line of level is not changed by posture, the patient be made to sit up in bed, and the loins be percussed, it will be found that the note is the samegenerally dull-on both sides. In the case of a large ovarian cyst, no matter how great the distension may be, we find one loin will give out a clear note, while the other is quite dull. In the cases of far-advanced pregnancy which I have examined in the same way, I have found both loins resonant on percussion. The explanation is easy. In ascites, the air-containing intestines float as far forwards as their mesenteric attachment will permit; while in the case of an ovarian tumour the coils of gut are pushed over to the healthy side, and in pregnancy are forced backwards to either side indiscriminately. I have elsewhere remarked that ordinarily when any real difficulty exists in the diagnosis of ascites

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from ovarian dropsy, the mere fact of difficulty may be taken as presumptive evidence in favour of the case being one of ascites. I do not at present remember having seen one instance where an ovarian tumour has been mistaken by a competent observer for a case of ascites; but I have known the opposite error often committed, even by gentlemen of great experience.

With regard to the general symptoms, a few words must suffice; since they of course differ materially, according to the cause of the disease. But in the advanced stages of dropsy of the peritoneum, we shall find more or less dyspnæa, owing to the pushing upwards of the liver, spleen, and stomach; while auscultation will show that the respiratory murmur cannot be heard so low as in health, that there is tubular breathing in the interscapular regions, especially on the left side, and that the apex of the heart is elevated and rather pressed to the left. In many cases also there is general or partial cedema, the lower extremities being very often anasarcous. This is especially the case when there is renal disease, in which instances the urine is usually scanty and albuminous. Generally the uterus occupies its normal position; but owing to the pressure of the fluid, together, perhaps, with a relaxed condition of the vaginal walls, I have seen it displaced downwards, forming a tumour between the upper part of the thighs.

Ascites and pregnancy may exist together. Very rarely it happens that impregnation occurs subsequently to the setting in of the dropsy; but much more commonly the pregnant uterus, at some period after the third month, induces the ascites, a pre-existing diseased condition of the liver or of the right side of

the heart obstructing the circulation, favouring its occurrence. When ascites is conjoined with pregnancy. as the latter advances the abdomen becomes enormously distended; there is dulness on percussion, with more or less distinct fluctuation; the uterine enlargement can only be detected by making deep pressure with the fingers, while the patient is on her back, with the head and chest elevated, and the knees drawn up, so as to relax the abdominal integuments; the signs of pregnancy are all obscured, and the auscultatory phenomena, if detected at all, are muffled and indistinct; and only the detection of ballottement by a vaginal examination, together with the changes in the areola, make the diagnosis at all certain. The general symptoms are painful in the extreme. Great pain is complained of in the back, loins, and thighs; there is cedema of the lower extremities; the renal secretion is scanty, highcoloured, often loaded with lithates, and occasionally charged with albumen; there is urgent dyspnœa, increased by taking food or exercise; the countenance is livid, and bears an expression of much anxiety; sickness, vomiting, constipation, headache, and palpitations increase the sufferings; there is an inability to move about, and such pain from difficult breathing on assuming the recumbent posture, that the patient is obliged to be constantly propped up in bed; and in short, so much severe general distress exists, that in order to give relief it is often necessary to remove the fluid by tapping through the abdominal wall, or even to afford more permanent ease by inducing premature labour.

An excessive secretion of liquor amnii—dropsy of the amnion—has been described by several authors; sixteen pints, and even more, having come away on rup-

turing the membranes. The statements of obstetricians concerning the normal quantity of liquor amnii are very contradictory: Hunter, Lowder, Burns, and others asserting that the average quantity varies from a pint to a quart. This opinion, however, seems to me to be incorrect; and I believe, with most continental writers, that in the majority of cases there is not more than from eight to twelve ounces. When the quantity slightly exceeds a pint, the pains of labour may be found weak and inefficacious, owing to the distension of the uterine walls; but there will not have been any particular suffering during the last month of gestation. The presence of three or four pints, on the contrary, may give rise to so much positive distress towards the end of pregnancy, that it may be absolutely necessary to afford relief by rupturing the membranes.

Different causes have been assigned for dropsy of the amnion; M. Mercier and others having generally attributed it to inflammation of the amnion alone. In by far the greater number of cases, however, which have been examined of late years, it has been noticed that there was an absence of anything like special inflammatory action in the membrane; though in almost all, some diseased condition of the entire involucra, or of the placenta, or of the fœtus, existed, rendering the child incapable of supporting life after its birth.

The signs produced by an excessive secretion of liquor amnii are generally well-marked. Thus, the uterus is always found much larger than in normal pregnancy; and hence it appears above the pubes, reaches the umbilicus, and so forth, at an earlier period than is customary. The uterine tumour is also tense, often more globular than usual, and smooth; the fœtal limbs and movements being inappreciable. Fluctuation may be

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distinct, if the uterine and abdominal walls be attenuated; and in other instances may sometimes be detected by the finger in the vagina on percussing the abdomen. Moreover, on practising auscultation the uterine murmur will be heard distinctly, while the fætal heart will be almost or quite inaudible; and an examination by the vagina will reveal to us an unusual degree of expansion of the inferior segment of the uterus, at the same time that we are able, with unusual ease and distinctness, to obtain ballottement. The general symptoms consist chiefly of a sense of pressure and weight in the pelvis, with frequent calls to evacuate the bladder, and occasional attacks of tenesmus. Scarpa, Desormeaux, and Dr. Robert Lee have related instances where the diagnosis of this affection has been rendered unusually difficult by its being complicated with ascites. But even in simple cases of dropsy of the amnion mistakes have been committed; and with the impression that the patient was labouring under ascites from disease of the liver, tapping has been had recourse to. Had a correct view been taken, however, and the membranes been artificially ruptured, a cure would in all probability have resulted, instead of death.

Advanced pregnancy is sometimes accompanied by great distension of the bladder, this viscus forming an oblong fluctuating tumour in front of the uterus. Independently of pregnancy a distended bladder has been mistaken for ascites, an error which may almost be said to be unpardonable. Mr. Clive was called to a lady for a complaint which was thought to be dropsy of the abdomen, and which he at first conceived to be so himself. On examination, however, he observed that the

upper part of the abdomen was more free from fluctuation than the lower; and it occurred to him that there might be some deception in the appearances, on account of a distended state of the bladder. On asking the lady whether she passed water freely, she replied in the affirmative; but, not feeling satisfied, he introduced the catheter, and drew off "an enormous quantity" of water, which had occasioned the appearance of dropsy.*

When a retention of urine takes place in the latter months of pregnancy, the bladder is unable to enlarge equally in all directions, because of the resistance which it meets with posteriorly from the gravid uterus. Hence, as the urine accumulates, the bladder assumes a flattened form, and spreads upwards and laterally to a great extent over the anterior part of the uterus, at the same time giving under percussion such an evident sense of fluctuation, that the case might be mistaken for a dropsy. An unfortunate instance of this kind happened to a practitioner in Ireland, who tapped his patient for this supposed dropsy; death being the consequence. On examination it appeared that the trochar had passed through both sides of the bladder, through the anterior wall of the uterus, and even into the head of the child.+ These examples teach us that before examining a patient for ascites, care should be taken that the bladder has been recently and thoroughly emptied; and if any doubt be entertained with regard

^{*} Lectures on Surgery. By Sir Astley Cooper, Bart., &c. Sixth Original Edition, p. 418. London, 1839.
+ Lowder, MS. Lectures. Quoted by Dr. Gooch, Opus jam citat.
p. 232. I have gone through the copy of Dr. Lowder's Lectures, written in 1782, belonging to the Royal Medico-Chirurgical Library, but cannot find this passage.

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to this matter, all uncertainty should be set aside by the introduction of a catheter.

4. FIBROUS TUMOURS OF THE UTERUS .- Of all the organic diseases of the uterus, fibrous tumours are probably the most common of those which first manifest themselves during the period of sexual vigour. They are generally globular in form, though from pressure they may attain every imaginable figure; and they are almost identical in structure with the tissue of the uterine walls. If a section be made of one of these morbid growths, it will be seen to be composed of a dense grey fibro-areolar tissue, intersected more or less freely by white bands having either a concentric arrangement, or a wavy distribution. On a minute examinationaccording to Valentin, Bidder, Paget, and others-it is found to be made up of fibres of areolar tissue, or elastic tissue, or of tendinous substance, with a granular matter and nucleated cells. Some of the broad unstriped muscular fibres of the uterus are also seen: while the growth is resolved by boiling into gelatine, as is the case with the uterine tissue itself. Fibrous tumours may be developed on the fundus immediately under the peritoneum, forming outgrowths from the uterus; or in any portion of the uterine walls, growing inwards in the direction of the cavity, or outwards towards the peritoneum. Of ninety-three specimens which I have examined in various London hospital museums, the tumour was situated in the uterine cavity in twenty-seven, in the posterior wall in twenty-three, in the anterior wall in seven, projecting from the fundus externally in twenty, in the posterior portion of the cervix in nine, while in seven the growths apparently invaded the whole uterus. These foreign bodies

may degenerate into cartilage, or bone, or simply into calcareous matter (carbonate and phosphate of lime): and they may be solitary or numerous. In one specimen which I removed from the body of an old woman, I counted as many as nine distinct outgrowths from the external walls of the uterus: while there are specimens in museums where a greater number may be made out. These tumours vary in size from that of a bean, to an orange, or an infant's head; and occasionally they attain even a very much greater bulk, some having been found to weigh as heavy as thirtynine or forty pounds. I have a patient under my care at the present time-October, 1859-whose uterus is enlarged by an oval, solid fibrous tumour, to at least a degree equal to that found at the full term of gestation. Though a woman of only ordinary stature, with the abdominal integuments very thin and tightly stretched, vet she measures seventeen and a half inches from the ensiform cartilage to the pubes; from the umbilicus to the pubes ten inches and a half; and in circumference midway between the umbilicus and pubes, thirty-seven inches and three-quarters. A distinct uterine souffle can be heard at different parts of the abdomen. It is almost certain that the morbid growth has become pediculated, and therefore could be removed were it not for the fact that its size is too great to allow of its entering the pelvic cavity: while an adhesion which it has contracted with the anterior wall of the uterus prevents a ligature being passed around its pedicle by the aid of Gooch's canulæ.

Fibrous tumours of the uterus are generally benign and harmless; many patients having been known to live for twenty, thirty, or even more years after they have first manifested themselves. Although insensible in themselves, yet when projecting into the cavity of the

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womb they are often very sensitive; this condition depending upon the irritability of the lining of the uterine cavity, which covering the tumour receives in its descent. Occasionally they thus become so painful as to prevent coition, and hence may be a cause of barrenness. If, in spite of the presence of one or more of these tumours in the cavity of the uterus, impregnation take place, the periods of pregnancy and labour are rendered unusually dangerous; the latter especially being liable to be followed by frightful hæmorrhage, or severe metritis. When the presence of one of these growths has complicated delivery or rendered it impossible, by its great size or its situation, recourse has been had to the Cæsarean section; an operation which, in this country at least, is almost always fatal. seated in the walls or at the fundus may interfere neither with copulation nor gestation; though they may even in these situations, by impeding the expansion and growth of the uterine tissue, produce abortion.

Before proceeding to speak of the symptoms produced by these tumours, I shall briefly relate two cases where mistakes were made in their diagnosis. In the first instance the error was very excusable, as the following history shows:—

A medical man was called up one night to attend, as he was told, a woman in labour. On his arrival he found the patient to be an unmarried lady, about forty years of age, and apparently very near delivery. There were the usual bearing-down pains recurring at intervals, and the ordinary uterine action. On examination he could not exactly determine what the presentation was, but imagined it to be the breech. He seated himself by the hed-side, and supported the perineum in the usual manner. The labour gradually advanced, and at length delivery took place—to his great astonishment—of an enormous polypus, which was attached to the fundus of the uterus. He very properly cut off the tumour close to its attachment, and the patient quickly recovered.*

^{*} The Dublin Journal of Medical Science, Vol. VI., p. 33. Dublin, 1835.

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Dr. Bedford, of New York, records the second case, that of a young lady who was afflicted with a large fibrous tumour of the uterus, which had been mistaken for pregnancy; and who, when the doctor saw her, was dying of phthisis, possibly brought on by intense grief and disappointment. The chief points are as follows:—

A gentleman of high standing in the Church of England had the misfortune to lose his wife while his only child was young in years. He became greatly attached to this daughter, and educated her himself; so that she was his fond pupil and constant companion. Soon after having attained her eighteenth year an attachment was formed between her and a young barrister of great promise: which attachment resulted in a matrimonial engagement. A few months afterwards her health began to decline; the menstrual periods became irregular, the abdomen and breasts enlarged. there was a marked change in her personal appearance, and she took a strong dislike to society; while at the same time she suffered from more or less constant nausea, loss of appetite, inability to sleep, and feverishness. These changes attracted the attention of some of her female acquaintance, and the rumour soon spread that they were the result of pregnancy. man to whom she was affianced, hearing of these reports, addressed a letter to the father requesting to be released from his engagement; a proposal which was assented to without any hesitation. At the young lady's request a medical man was now called in; who, after an investigation of her symptoms, informed the father that she was undoubtedly pregnant, and advised that steps should instantly be taken to keep the unpleasant matter secret. The father indignantly spurned the proposal, and requested an additional opinion. A consultation was accordingly held, the result of which was a confirmation of the view previously expressed. Without delay the venerable and accomplished gentleman determined to resign his living, gather up his little property, and proceed with his daughter to America. On the passage out she became extremely ill; and there being a physician on board the vessel his advice was requested. After seeing the lady, who was then affected with excessive vomiting from sea-sickness, he told the father there was danger of premature delivery. On Dr. Bedford examining the patient, he found that she was not pregnant, but was in the last stage of consumption. Four weeks afterwards she died; and at the post-mortem examination a large fibrous tumour was removed from the uterus. *- This sad case, in which probably both character and life were sacrificed by gross want of skill on the part of those whose aid had been invoked, shows the fearful responsibility which is not unfrequently thrown on the medical man, and the cruel result which may follow from his being rash or ignorant. Well might the broken-hearted father exclaim, as the tumour was removed from the womb, —"This is my trophy, and I will return with it to England, and it shell confound the traducers of my child."

^{*} Clinical Lectures on the Diseases of Women and Children. By G. S. Bedford, M.D., Professor of Obstetrics in the University of New York, &c. Fourth Edition, p. 50. New York, 1856.

The symptoms produced by fibrous tumours are often neither prominent nor well-marked; and indeed these growths not unfrequently exist without giving rise to a suspicion of the presence of any uterine disease. But on the other hand, when of a size sufficient to be detected through the abdominal wall, they are often the cause of menstrual disturbance; of a dull, aching, or throbbing pain; of a sense of weight and bearing-down in the pelvis; of cramp or numbness in one or both thighs; of a difficulty in evacuating or holding the urine; and of constipation, with hæmorrhoids. Pediculated fibrous tumours-commonly known as uterine polypi-are almost always attended by one very prominent symptom, and that is hæmorrhage; and with a little latitude the same remark will apply to submucous tumours merely projecting into the cavity of the uterus. When the first symptom of the existence of a fibrous tumour is a sudden attack of hæmorrhage, the patient not unfrequently tries to persuade herself that she has been pregnant, and aborted; but the practitioner must not be misled by her statements or opinions. He will distinguish the true nature of the disease by learning that the loss of blood has probably been excessive; that the hæmorrhage has returned more than once without warning, and without being accompanied by uterine contractions or pain; and especially that the tissue of the cervix is firm, and the os thin and small. instead of being relaxed, swollen, and patulous, as after abortion. Very frequently, especially with submucous tumours projecting into the cavity of the uterus, the patient first has her attention directed to the womb by noticing that the menstrual discharge is more abundant than usual, that its duration is greater, that it is attended with clots, and that its cessation is followed by leucorrhœa. The monthly periods also recur more frequently than is natural; they are accompanied with great pain in the back and thighs, and bearing-down or dragging sensations; there may be expulsive efforts, simulating labour pains, sometimes occurring only with the catamenial flow, and sometimes coming on in the intervals with more or less frequency; and while the courses continue, and even for some few days before and afterwards, the patient is incapacitated from following her usual duties.

On making a vaginal examination we shall generally find the weight of the uterus increased, while its mobility is diminished; the vagina also being lessened in length. If the tumour be in the cavity, the os may sometimes be found patulous, and the tumour projecting between its lips; but more frequently the mouth of the uterus is closed, and the cervix absorbed into the substance of the walls, so that we feel merely a rounded body with a slight depression and opening at its lowest part. When the tumour occupies the posterior wall it often produces retroversion of the uterus; and consequently the fundus of this organ then lies upon the rectum, while the cervix is pushed forwards and upwards under the pubis. Supposing the growth to be in the anterior wall, the uterus will often be found anteverted; that is to say, with its fundus on the bladder, and its os looking directly towards the sacrum. Instead of retroversion or anteversion, there may merely be retroflexion or anteflexion; or the tumours may even be large and heavy, without causing any uterine displacement whatever. Provided that the practitioner is certain of the non-existence of pregnancy, he will derive great assistance in forming a positive opinion on the nature of the growth from the use of the uterine sound. When this instrument is introduced into the healthy uterus, it passes for two inches and a half;

and by it—without any rough manipulations—the organ can be elevated, or turned to either side, or bent backwards or forwards. In most instances of fibrous tumour the cavity is elongated; while, if the tumour be in the walls, or closely attached to them, the sound appears to enter the mass so that the uterus cannot be separated from it, both can be only moved simultaneously, and at the same time the womb is found to have lost its healthy mobility and freedom.

Whatever may be the cause of uterine enlargement—whether it be a tumour or retention of the catamenia—the breasts generally become somewhat developed and tumid; and sometimes the areola also darkens, or the follicles increase in size and number. But it is only in pregnancy that the nipples and the areolæ undergo all those peculiar changes which have been previously described; for in no other cases do we find, combined with the development of the glands, enlargement of the follicles and an increase in their number, cedema of the areolæ, moisture of these parts, and a gradually increasing deposit of pigment in their tissues.

If we practise auscultation over a uterine tumour we shall very frequently detect a souffle; which may sometimes be due to the pressure of the growth on the aorta or iliac arteries, but which I believe generally has its seat in the vessels of the enlarged uterus. This murmur might lead to the case being mistaken for pregnancy; but unless this condition co-exist, we shall be unable to discover the fœtal heart, or anything approaching to fœtal movements.

Reference has already been made to the fact that these uterine tumours may co-exist with pregnancy. It therefore becomes an important question how we may best discriminate this condition under these circum-

stances. The only rule which can be laid down for the assistance of the practitioner under these circumstances is this, that the patient must be most carefully examined, the history of the symptoms thoroughly sifted, and the knowledge obtained from these two sources fairly weighed and compared. Perhaps the details of the following case may make this matter rather clearer :- In October, 1855, a lady residing at Dalston consulted me about an abdominal tumour from which she had suffered for some months. She was thirty-five years of age, had been married six years, had never been pregnant, and the catamenia were regular. On examination I found a fibrous tumour about the size of the fœtal head at the full term, growing in the anterior wall of the uterus. Under the use of the bromide of potassium and cod-liver oil the general health improved; but the growth remained unaffected. On the 18th December, 1856, this lady again consulted me, as the tumour had apparently very much increased in size, and now extended to midway between the ensiform cartilage and the umbilicus. examination the growth struck me as presenting peculiarities which were not at first noticed. It was hard at its upper part, but very elastic in the middle and below; it was particularly even, and not at all nodulated; a loud uterine souffle was heard to the left, on a level with the umbilicus; and on making a vaginal examination, the womb was found equably enlarged, the cervix soft and congested, and the lips of the os hypertrophied and cushiony. Moreover, the catamenia had not appeared since the month of July, though they had previously been regular; there was a distinct areola round each nipple, but no very characteristic appearance; and none of the common general symptoms of pregnancy were complained of. Hoping that pregnancy

existed, I was yet afraid to give an opinion; and requested her to see me again in a fortnight. On the 31st December, all doubts were set at rest by my hearing the fœtal heart. On the 19th April, 1857, I delivered her of a live female child, after a lingering labour; from which, however, she recovered without an unfavourable symptom.

The fear that these tumours may become greatly increased in size as pregnancy advances, and that they must be compressed and bruised during the process of parturition by the contractions of the powerful uterine fibres, has led some physicians to strongly recommend the induction of premature labour in all such instances. The late Dr. Ashwell was a great advocate for this proceeding; believing that if such cases were left alone and the tumours escaped mechanical injury, yet that they were liable to become softened during the latter months, that the increased supply of blood which they received led to inflammation, that unhealthy suppuration became established in them, and that, as a consequence, death occurred soon after delivery. But the absolute correctness of these views has not been confirmed by subsequent observers; although all practitioners allow that these complicated cases are serious, and require great care in their treatment. To lay down such a sweeping rule as that just mentioned is therefore unnecessary; but at the same time there is no doubt that premature labour should be induced, if the tumour, from its size or position, be likely to prove any obstacle to delivery at the full term, or if there co-exist any pelvic deformity. Moreover, it will always be advisable in every case to consider carefully whether such an operation be necessary; allowing the judgment free play, unoppressed by any bias one way or the other. In many instances these tumours have a tendency to produce abortion; but I have more than once found it advantageous to prevent this event rather than to encourage it.

5. ENLARGEMENTS OF THE LIVER, KIDNEYS, SPLEEN, &c.—Strange as it may appear, yet it is undeniable, that hypertrophy of the liver has given rise to symptoms which have been attributed to pregnancy. Thus, Mr. Ingleby mentions the case of a woman who died under a suspicion that she was pregnant; but in whom the great bulk of the liver, in conjunction with an effusion of serum into the pelvic cavity, gave the abdomen the appearance which led to error. The liver was found to weigh nearly sixteen pounds.-Smellie saw a girl only twelve years of age, in the Marylebone workhouse, who was supposed to be in the eighth month of pregnancy. Several medical men had examined her, one of whom had offered to deliver her gratis; while others had made interest to be present at her accouchement. The case was even advertised, and the matron obtained money from numbers who went to see her: until the farce was concluded by the necessity for sending the patient to an hospital to be cured of her enlarged liver—the source of the mistake.*

Most of the hepatic diseases which present organic changes cognisable to the senses during life, are accompanied by enlargement. This of course varies in degree, according to the nature of the disease and its severity. In slight disorders there will merely be found increased fulness beneath the ribs on the right side; but in more serious cases—as in great hypertrophy, cirrhosis with effusion, abscess, perhaps cancer, and hydatid

^{*} A Collection of Cases and Observations in Midwifery. By William Smellie, M.D. Fourth Edition. Vol. II., p. 195. London, 1768.

tumour—the enlargement may be such that the glaud will seem to occupy the entire abdomen. Moreover, when the enlargement is only moderate, the gland may yet be found very low down in women who have been in the habit of wearing tightly-laced stays. Even in health, the compression thus exerted upon the lower part of the thorax may force the anterior edge of the liver quite as low down as the crest of the ilium; while, at the same time, its upper convex surface has been found deeply indented by the pressure of the ribs.

In cases of enlargement when the patient is emaciated, the diagnosis will generally be found free from difficulty; particularly if the practitioner take note of the increased bulge of the lower ribs on the right side, of the situation of the free margin of the liver, of the persistence of dulness on percussion from the lower edge of the gland over the whole enlargement, and of the dilated veins on the exterior of the abdomen. But when the parietes are loaded with adipose tissue, and the viscera are filled with gas, it is not quite so easy to avoid error. We then must take especial care to observe that none of the signs of pregnancy are present; that the measurements of the right side of the abdomen exceed those of the left, unless the spleen be also simultaneously enlarged; that there is greater resistance to the hand on pressing over the right side than over the left, and that this increased resistance is continuous from the margin of the right ribs; that there is defective abdominal respiratory movement on the right side, owing to the impeded descent of the diaphragm, while the motion on the left is exaggerated; that the respiratory murmur on the left side of the chest is generally puerile; that the tumour has much less mobility than the gravid uterus; and that the enlarged liver soldom descends so very low but that some space exists between the edge of the gland and the upper margin of the pelvis, where there is found resonance on percussion. In hepatitis, which has gone on to suppuration, the constitutional disturbancefever, shivering, pain, emaciation, &c .- will afford a clue; not to mention that when the abscess is large there is almost always a bulging or "pointing" in some situation corresponding with the situation of the liver. Malignant disease seldom produces general enlargement; but rather gives rise to masses, which are numerous but small, and the projections of which are perceptible to the touch. Encephaloid growths, more commonly than scirrhous, extend to the pelvis; but the general phenomena are such that the disease cannot be mistaken. Hydatid tumours are mostly globular in shape, have an even and smooth surface, are very slow in their growth, have a high degree of elasticity, sometimes fluctuate, often transmit the aortic pulsations unless the patient be placed on the hands and knees, and furnish the hydatid fremitus on practising auscultation. In all the cases we have been considering, the examination will be facilitated by taking care that the bladder is quite empty, and that the colon has been thoroughly evacuated by an enema.

The kidneys may occupy positions different from their normal ones, and this malposition may be accompanied with great increase in size. Or one renal organ may be in its natural position, and the other far removed from its ordinary site. Andral relates a case where one gland was in its natural situation, and the other in the hypogastric region immediately over the bladder.—The two organs may also be united so as to form one body, giving rise to the so-called "horse-shoe" kidney. Such a gland was shown to the Pathological Society by Dr.

Bence Jones.* In this instance the crescent-shaped organ weighed twenty ounces; it was placed across the lower lumbar vertebræ, the inferior and convex margin being opposite the brim of the pelves; it had two ureters, and the pelves with which the ureters were connected did not communicate; while on making a section no indication could be found that the organ had originally been formed by the fusion of two distinct kidneys.-In rare cases the gland on one side is wanting, and then the one present is found much enlarged .-Hydronephrosis, or dropsy of the kidney, gives rise to a tumour which may attain considerable size; but then the tumour is always of slow growth, and the symptoms, apart from the signs obtained by physical examination, are well marked.—Cancer of the kidney may proceed to such an extent that a very large growth results. In one case which I saw, the gland occupied the whole abdomen, was centrally placed, and was mistaken for an ovarian tumour. But in this instance the diagnosis was complicated by the co-existence of pregnancy, which ran its natural course. Three weeks after labour the patient died, and the left kidney was then found to weigh upwards of twenty-seven pounds .-Lastly, a movable kidney-some thirty examples of which have been recorded by Rayer, Oppolzer, Hare, Hennoch, George Johnson, and W. Henderson-might be mistaken for a morbid growth. It could scarcely, however, be confounded with a case of normal, or even of extra-uterine pregnancy; its situation, chiefly in one or other hypochondriac region, its form and size, and the absence of all constitutional disturbance or even inconvenience, sufficing to distinguish it.

^{*} Transactions of the Pathological Society of London, Vol. VII., p. 264.
London, 1856.

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The spleen may attain such a size as to almost fill the abdomen; when a mistake is not unlikely to be made as to the nature of the swelling. The diseased conditions which increase the volume of this organ are especially inflammation, fibrinous deposits, hypertrophy, the lardaceous spleen, tubercular growths, cancer, and cysts of various kinds. This gland may become so hypertrophied as to weigh from two or three to eighteen pounds; and instances are recorded where it has been found as heavy as forty pounds. In the examination of these cases reliance must chiefly be placed on the detection of the thin anterior edge of the organ, and its notched condition; on its smooth convex surface; on its mobility, and superficial character; on its seldom occupying as much of the right side as of the left; and on the presence of the "splenic murmur;" while the connexion of the tumour with special constitutional symptoms-such as ague, leucocythemia, or typhus feverwill usually show the exact character of the disease. But in proof that erroneous opinions may be formed, the following is quoted :-

Stella, an African slave, aged forty, the mother of four children, was led to consider herself pregnant in April, 1831, in consequence of the interruption of the catamenia, and the presence of other indications of pregnancy. She continued to follow her usual avocation as a field-hand unthe close of the year; when the gradually increasing size of the abdomen, the ædematous condition of the lower extremities, and more especially the absence of all internal motion, induced her master to look upon it as a dropsical affection. In January, 1832, she was examined by Dr. W. M. Lee, who found the abdomen fully as large as at the expiration of the usual term of pregnancy; and who diagnosed the disease as scirrhus of the left ovary. In April of the same year she died; and it was then discovered at the autopsy that the enlargement was due to the hypertrophied spleen. This organ, when removed, was found to measure twenty-seven inches in its longitudinal circumference, sixteen inches and three-quarters in its transverse circumference, and to weigh five pounds and a half.*

Mr. Ingleby also mentions that he once opened the

^{*} The American Journal of the Medical Sciences, Vol. XII., p. 383. Philadelphia, 1833.

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body of a woman who had been pronounced to be in a state of pregnancy; but the enlargement was ascertained to depend upon a diseased spleen, which weighed nine pounds.

A tubercular condition of the peritoneum might mislead if only an imperfect examination were trusted to. Mr. Ingleby says that he met two practitioners in consultation upon the case of a middle-aged unmarried woman, whose abdomen had become very evenly and progressively distended, until it resembled the gravid uterus at the seventh month. The body of the uterus was distinctly enlarged, and the woman believed herself to be pregnant. Amenorrhæa followed indulgence in sexual intercourse, and the health gradually de-The patient died; and on examination the clined. enlargement was found to consist in a tuberculated condition of the peritoneum generally, but particularly of that portion covering the uterus. Notwithstanding the evenness of the abdomen, the whole serous membrane was studded with tubercles, varying in size from mere granules to a large walnut.

Dr. Robert Lee records the following case :-

A young woman who resided in a family at Bayswater was attacked with tuberculated disease of the peritoneum and omentum. The abdomen enlarged so much that pregnancy was suspected, and the medical attendant of the family was requested to see her, and ascertain if such was the case. He reported that she was in an advanced stage of pregnancy, and consequently she was compelled immediately to quit her situation in disgrace. She obtained, by some means, a letter of admission into St. George's Hospital, where Dr. Robert Lee was requested to see her, to ascertain if the enlargement of the abdomen arose from pregnancy. The abdomen was as large as it usually is at the commencement of the ninth month; there were white lines on its sides, and the navel protruded. No movements were felt indicative of pregnancy, nor sound heard by auscultation. The mamme were shrunk, and there were no areole. The uterus was found on examination to be pressed down close to the outlet of the pelvis by agreat mass of disease above, which was thought to be probably ovarian. Even after this examination, Dr. Lee was requested a second time to look at the case, and be sure that there was no mistake. The diagnosis was

correct, and she died in the midst of great agony, in the course of a few weeks. There were immense masses of tuberculated accretions found occupying the whole sac of the peritoneum and omentum.*

Fæcal accumulations may occur at any part of the colon, or they may be distributed through the lower part of the small intestines and the whole of the large gut. Generally, however, they are found in the cæcum, or in the sigmoid flexure of the colon, or in the rectum. When the accumulation is large and conjoined with a flatulent state of the small intestines, the abdomen may be found very greatly increased in all its measurements. An inordinately large stercoral tumour has more than once given rise to a suspicion of pregnancy. I have seen an instance of this kind in which the woman was certainly as large as at the seventh month of gestation; the cause of the increase in size having been overlooked by more than one practitioner, simply because on inquiry the bowels were stated to be relaxed. But the fact was that the rectum and a portion of the colon were completely choked by hardened fæces; a channel having been formed through the mass to allow of a slight escape. The persevering use of warm purgative enemata soon removed all doubt as to the nature of the case; but though the patient ultimately recovered, it was a long time before the intestinal coats regained their normal tone.

The following affords also a good example of a stercoral tumour being mistaken for pregnancy:—

Madame L., atat forty-eight, in good health, with the menses irregular and appearing only at long intervals, consulted her physician respecting a swelling which had appeared, and was increasing in the hypographic patrium. Pregnancy was diagnosed. But at the end of nine months nothing made its appearance; while the tumour continued gradually, to increase in size. When M. Laronde was called in, the patient was despaired of by her attendants. He found her condition as follows:—

Lectures on the Theory and Practice of Midwifery. By Robert Lee, M.D., F.R.S., &c., p. 168. London, 1844.

Pulse small and weak; decubitus dorsal; prostration very great; face pale, emaciated, and characteristic of a chronic affection of the intestinal canal; breath fortid, gums soft and bleeding; while there was an abdominal tumour extending as high as the umbilious, hard and rounded, which instead of rising from the sides, seemed intimately connected with them. The tumour felt like a mass of half dried earth or clay. The patient went to stool once or twice daily, and occasionally she was troubled with diarrhosa. Glauber's salts, &c., were administered; an immense quantity of fæcal matter was discharged; and the tumour disappeared.*

A case of enteritis, with retention of fæces, simulating pregnancy and labour, has been put on record by M. Barbieri, a surgeon in Fifeshire:—

The patient was thirty-two years of age, rather stout, and the mother of two children. Pains like those of labour set in on the morning of the 16th December, 1840, and recurred every five minutes. In answer to various questions, she said that the catamenia had been absent for nine months and two days; she had quickened at the end of four months and a half; the motions of the fœtus had become progressively stronger every month; she had experienced morning sickness, heartburn, longings, dysuria, cramps, frightful dreams; and for the last two months had been troubled with varicose veins, and anasarca of the legs. Just before the Doctor's arrival the liquor amnii—it was said—had been discharged; and at the time there was a slight sanguineous flow. After a careful examination it was found that pregnancy did not exist; and the presence of enteritis, complicated perhaps with Bright's disease of the kidney. was diagnosed. The treatment adopted was rather active. A dose of castor-oil prepared the way for more powerful measures. Sixty-four oances of blood were then abstracted from a large orifice: in ten minutes "profound syncope and collapse followed, which continued nearly a quarter of an hour, accompanied by an incredible amount of liquid faces," filling at least four large chamber urinals. Three grains of opium and eight of calomel were then administered. "She was now necessarily left for eight hours, owing to an obstetric engagement." The treatment was then renewed. As the urine was albuminous, she was again bled to thirty-two ounces; forty leeches were applied to the ilio-cæcal region, and the hipbath used when they fell off; a blister was put over the whole abdomen, and afterwards dressed with strong mercurial ointment; and she had two grains of calomel with a quarter of a grain of opium every four hours. When the intestinal inflammation was subdued, on the third day, acute gastritis set in; "and notwithstanding the most energetic local treatment," the poor lady died on the sixth day "of the acute attack." + It would be injudicious to weaken these facts-which are obviously published for our instruction—by any comments; for though we may agree with the author that the case "is one of extreme interest," yet it presents other features which it would be injudicious to characterize in words such as they deserve.

Journal de Médecine et de Chirurgie Pratique. Paris, Novembre, 1850.

⁺ The London and Edinburgh Monthly Journal of Medical Science, Vol. IV., p. 185. London and Edinburgh, 1844.

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Mr. Roberton relates a case in which a very large ventral omental hernia, complicated with abdominal dropsy, was mistaken by several medical men for extrauterine pregnancy.* This gentleman examined the patient in the year 1839, twenty-two years after an exploratory opening had been made into the tumour, and the skull of the fœtus (as the operator declared) felt. The tumour was situated on the left of the median line: but as the patient was stout, it was not easy to determine its size. The protuberance was firmer to the touch than the surrounding parietes; while from the most depending part, just above the pubis, hung a pouch-like tumour, the size of a melon, which it was evident contained fluid. A hard substance was also felt which the imagination regarded as the cylindrical bones of a fœtus. Five years afterwards the lady died, and at the post-mortem inspection the following was found:-About two inches below the umbilicus, and a little to the left side, was a loose shrivelled sac, apparently empty. By making a semicircular incision into the abdomen, so that, when the flap was turned down, the sac could be viewed from the inside, there was discovered an opening into it that would admit three fingers; through which opening passed a longish protrusion of the omentum, about the thickness of a finger, and which adhered at its extremity to the upper fore-part of the sac. The sac itself would have contained an ordinary-sized fist. The uterus and its appendages, the bladder, and all the pelvic viscera, were quite healthy and in situ. It was clear that the substance which the operator had mistaken for the fœtal skull was a mass of indurated omentum.

^{*} Essays and Notes on the Physiology and Diseases of Women, and on Practical Midwifery, p. 431. London, 1851.

Encysted dropsy of the peritoneum, in which a cyst containing fluid is formed between the parietes of the abdomen and this serous membrane, could scarcely be mistaken for pregnancy. Still the occasional occurrence of such a disease may be advantageously remembered; more especially as it would seem to be more frequent in women than in men. Of twenty-six examples referred to by Lieutaud, twenty-four occurred in females. The disease with which it has generally been confounded, when in an advanced stage, is ascites; but it may be usually distinguished by noting the absence of constitutional disturbance, and the less uniform enlargement of the abdomen.

Very large cysts occasionally, though rarely, form in the folds of the omentum, or on the under surface of the liver, or under the posterior part of the peritoneum; and though quite unconnected with the ovaria, yet they have been found to contain the products of certain ovarian tumours, viz., fat, hair, bone, &c. The following very good example of a cystic tumour existing under the peritoneum, and presenting during life all the appearances of ovarian dropsy, has been recorded by Mr. Lee:—*

Mrs. ——, setat. 50, married, had been labouring under a tumour of the abdomen for twenty-five years. She had had one child previously to its appearance, and three since; and she suffered by the disease in nothing but its bulk, up to the last being able to amuse herself with her household duties. The tumour was of an enormous size, disturbing the breathing, and at last producing fatal symptoms. On an examination after death the cavity of the abdomen was found almost entirely filled by an enormous tumour, which pushed up the viscera to the right side, and compressed the spleen posteriorly. It was found to have commenced on the left side, just under the pancreas, but below the peritoneum, so that it rested upon the posterior muscular walling of the abdomen. A narrow pedicle, six inches long, of the size of a quill, connected it with the uterus. It had also formed connexions with the other viscera of the abdomen. The cyst itself contained two pailfuls of a turbid whitish-coloured fluid, with

^{*} On Tumours of the Uterus and its Appendages. By Thomas Safford Lee, M.R.C.S.E., &c., p. 124. London, 1847.

an immense number of balls of hair mixed with fat, in which was calcareous matter: no hairs were observed attached to the cyst, but the balls of hair, fat, and osseous deposit were as large as the closed hand. On the left side of the cyst was attached a mass of bone, teeth, &c., strongly resembling an imperfect fectus. This body was about four inches long, and covered by a membrane resembling the true skin, but closely connected with the sac. It presented at its upper portion an opening divided into two parts, like the imperfect nostrils, immediately under which was a large bone, like the lower maxilla, filled with teeth; on each side of this part projected a small appendage resembling the ear; and below this mass, were two long appendages like abortive arms; the right one being the smallest, and composed of skin, at the end of which were a few hairs. The left appendage was larger, still more closely resembled the arm, and was apparently jointed at the shoulder and elbow; it contained one strong bone like the humerus, and two small bones for the fore-arm. At the lower extremity of the body of this mass was a large projecting bone, also jointed. This approached the form of a femur, at the lower extremity of which was an irregular osseous deposit.

This case shows strongly that these formations of teeth, bone, &c., in certain tumours are in no way connected with the functions of generation in the individual presenting them; but proves that they are coeval with her in whose body they are found, being due to the original inclusion of one germ within another. In other words, two ova are impregnated, though only one reaches maturity; the other being arrested in its development at an early stage, but becoming adherent to the body of the healthy fœtus, in which it is found after birth in the form of a tumour. The same explanation applies to those cases where hair. teeth, bones, &c., have been found within the one or other of the ovaria of girls, where impregnation has not, and could not have taken place; as well as to those curious instances in which fœtuses have been found in the bodies of boys, examples of which have been recorded by Mr. Young, Highmore, and Dupuytren.*

^{*} Medico-Chirurgical Transactions, Vol. I., p. 236. Third Edition. London, 1815. The paper was read before the Society by Mr. Young, March 16, 1808. See also, The Case of a Factus found in the Abdomen of a Young Man at Sherborne, Dorsetshire. By Nathaniel Highmore, LL.D. London, 1815. The preparation described in this work is in the Museum of the Royal College of Surgeons of England.

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6. Hæmatometra, Hydrometra, and Physometra. -Distension of the uterine cavity from retained menstrual blood-hæmatometra, as it is technically calledmay give rise to signs which might lead to a suspicion of the existence of pregnancy, or of some disease of the uterine or abdominal organs. This condition may arise from a tough imperforate hymen, or from closure of the orifice of the vulva owing to an attack of inflammation, or from the os uteri being occluded. Under either of these circumstances the menstrual fluid gradually collects in, and distends the uterine cavity; the walls of which generally become hypertrophied. In a case of imperforate os uteri, with retention of the menses, about which I was consulted, the abdomen was quite as large as at the sixth month of gestation; my opinion being sought for the purpose of determining whether the enlargement was due to pregnancy or to an ovarian tumour. As will appear, however, there was no difficulty in forming a correct diagnosis. The patient was twenty years of age, had never menstruated, and had been in very delicate health for nearly four years. The enlargement had been perceptibly increasing for nearly three years; during which time she had suffered very frequently from nausea and constipation, from constant aching in the back, and at intervals of about a month from severe bearing-down pains. The oval and even shape of the tumour seemed to show that it was the uterus; there was dulness on percussion over its surface; and an indistinct sense of fluctuation was communicated to the touch. Examining per vaginam, the body of the uterus was found enlarged, and the cervix obliterated; while there was also a complete absence of the lips, and merely a slight depression where the os should have been, but not the smallest opening. The passage of a curved trocar into the cavity of the uterus confirmed the diagnosis, by slowly permitting the escape of about three pints of a thick viscid fluid, somewhat resembling treacle, which possessed a slightly fœtid odour. The tumour of course disappeared; and the subsequent careful dilatation of the opening with small sponge tents effected a permanent cure.

It must be remembered that retention of the menses may not only occur in women who have never had any external manifestation of the catamenial flow, but also in those who have even borne children. Thus, the lips of the os uteri may suffer from adhesive inflammation, owing to the improper employment of caustics, or to the careless use of instruments during labour, or to some blow or accident, or to the criminal introduction of probes, pieces of whalebone, &c., to induce abortion. Instances are known where attempts to destroy the product of conception in the manner just mentioned have failed in their object, and yet have produced so much mischief that ulceration and adhesion of the labia uteri have followed. In such, when the pains of labour come on, there is of course no outlet for the child; and unless an opening be made at the site of the os, the uterus will either rupture, or the woman die undelivered.

It will very rarely happen that the opposite error to the one just treated of can be committed—viz., the mistaking the enlargement of pregnancy for that due to the retention of the menses; yet the following history will show that such is possible. Some years since, Professor Rossi was hurriedly sent for by a married woman, who had been attacked with violent abdominal pains. On examination, he found that the external organs of generation were entirely wanting, there being no hair upon the mons veneris, and no signs of puberty. He dismissed the idea of pregnancy from his mind, and

attributed the pains to the absence of any passage for the discharge of the menses; and therefore determined at once to let out the catamenial fluid by making an incision three inches long in the direction of the vagina. On introducing his finger, however, through the opening thus made, he ascertained that the woman was really in labour; so that by enlarging the incision, she was delivered quickly of a male fœtus. On subsequently instituting a more careful examination, M. Rossi discovered near the sphincter ani a minute opening, which would scarcely admit a very fine probe; and this orifice was found to communicate with the passage made by the knife.*

The collection of a thin serous or watery fluidhydrometra-in the uterus, or of pus-pyometra-in the same situation, may give rise to an erroneous diagnosis; particularly if the accumulation should amount to several ounces. The degree of enlargement of the uterus, and the fulness of the hypogastric region, will of course vary according to the length of time that the cervix has been blocked up, or the os completely closed; as well as upon the circumstance of the mucous membrane of the body of the uterus being healthy, or affected with a kind of chronic catarrh causing its natural secretion to become much increased in quantity. Moreover. unless the climacteric period has been passed, or unless there is perfect amenorrhea, hydrometra must become complicated with hæmatometra; and then the fluids retained may amount to many pints. A case is described by Vesalius,+ in which the uterus was found

Memorie della Reale Acad, delle Sc. di. Torino. Tomo XXX. I am only acquainted with this case from finding it quoted in The American Journal of the Medical Sciences, Vol. I., p. 434. Philadelphia, 1828. † De Humani Corporis Fabrica. Liber V., cap. 9, p. 627. Basil, 1548.

to contain one hundred and eighty pints of watery fluid, the edges of the os uteri being firmly adherent. Ploucquet* also gives references to several other examples; but the most recent characteristic instance which I know of has been published by Dr. Anthony Todd Thomson.† The chief points of medical interest are as follows:—

A widow, sixty-five years of age, of intemperate habits, the mother of two children, was admitted into the infirmary of the Chelsea workhouse in December, 1823. Nine or ten months previously she first noticed an enlargement of the lower part of the abdomen, but had no advice for it. On examination a tumour was found, rising as it were out of the pelvis, and occupying the iliac, hypogastric, and umbilical regions. She appeared as large as if six months gone with child; an indistinct fluctuation was perceptible, and the least pressure on the tumour excited pain. The disease was regarded as a dropsical ovarium. In January, 1824, the left foot was found to be affected with dry gangrene; and in the following month the limb was amputated. On the third day afterwards the patient sank and died. At the post-mortem examination, on dividing the abdominal parietes, a body resembling closely the gravid uterus was seen occupying the whole of the pelvic cavity, and the greater part of the abdominal. On its anterior surface, and firmly adhering to it, was the urinary bladder, which was found to extend to within an inch of the umbilicus; so that it must have been perforated, if the trocar had been employed under the supposition that the disease was ovarian dropsy. The tumour was at once ascertained to be the uterus; which was greatly enlarged and filled with eight quarts of a dark brown-coloured albuminous fluid. The existence of a large hydatid was suspected: but this opinion was incorrect, for the sac consisted merely of the uterus, in the cavity of which the fluid was contained. The internal surface of the organ was not more irregular nor more spongy than in its natural state, but none of the orifices could be found, for even the os uteri was interiorly as completely obliterated as if it had never existed; and although its situation could be traced in the vagina, yet even there it was very faintly marked.

There is a peculiar disease of the follicles of the cervix, which has been described as hydrorrhæa uteri; and which, if unknown, is not unlikely to be mistaken for hydrometra. The distinction, however, is easy; for in the former, as there is no obstruction, so no tumour is formed. Indeed, the only symptoms consist

^{*} Literatura Medica Digesta, sive Repertorium Medicinæ Practicæ, Chirurgiæ, atque rei Obstetricæ. Tomus II., p. 383. Tubingæ, 1808. + Medico-Chirurgical Transactions, Vol. XIII., p. 170. London, 1827.

in the continual escape of a thin serous fluid, often in considerable quantity; and a depressing feverish condition of the system, with more or less pain in the loins. Hydrorrhœa uteri is not a common affection; it affects both the unimpregnated and the gravid uterus; and it depends upon a sort of catarrh, or excessive activity of the follicular structure of the cervix. In cancer of the uterus there is also very generally an abundant watery discharge; but the cause of this is at once made apparent on instituting an examination by the vagina.

The accumulation of gas in the uterus—physometra although a very rare affection, and one that not a few eminent obstetricians have thought impossible, is still no fictitious disease. In extensive tympanites of the uterus the abdomen is found enlarged; just above the pubes, and extending upwards through the hypogastric region to a variable height, an ovoid, non-fluctuating tumour may be discovered, on percussing over which uniform resonance is elicited; while on making a vaginal examination, the uterus will be detected dilated and elastic, and with its lower orifice closed. The passage of the uterine sound will open the os uteri, permit of the escape of the gas, and so cause a subsidence of the tumour. Sometimes the gas is expelled involuntarily; the air-evacuations taking place frequently, with violence, and with a peculiar explosive noise. The gas is inodorous, unless it has been generated in utero by the decomposition of a portion of retained placenta, or by a putrefying ovum or clot of blood.

At a meeting of the Obstetrical Society of Edinburgh, in 1856, Dr. Keiller stated that he had seen several cases of physometra. His conviction was, that although the gas might be in some instances directly

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exhaled from morbid uterine or vaginal secretions, and then afterwards become suddenly expelled, yet that this explanation would not apply generally. On the contrary, he believed that the air was not evolved in the uterus or vagina previous to its expulsion, but that it was first received from without, and then subsequently expelled; the ingress, retention, and subsequent explosive egress of atmospheric air constituting the essential character of the infirmity. The suction-like action of the levatores ani and abdominal muscles on the walls of the vagina, thus occasionally leads to the presence of air in the uterine passages; where the gas quietly accumulates, until the parts become distended, and cause its involuntary expulsion.

CHAPTER IV.

THE DURATION OF PREGNANCY.

Contradictory views entertained on the subject.—Ordinary duration of pregnancy ten lunar months.—The exciting cause of parturition.—
Our ignorance of the interval which elapses between intercourse and the actual vivification of the ovule.—Tables of cases by Drs. Merriman, Reid, and Murphy.—Forty-three cases of conception, the dates being calculated from a single coitus.—M. Tessier's researches on cows, mares, &c.—Earl Spencer's Observations on the time of gestation in 764 cows.—To what extent may pregnancy be prolonged beyond the normal period t—Protracted parturition sometimes mistaken for protracted gestation.—No satisfactory evidence that pregnancy has ever been prolonged beyond ten calendar months.

A PERUSAL of the medical evidence which has been given in various courts of law, as to the duration of pregnancy, can only excite the reader's astonishment: for not only are the very positive statements of different physicians in different countries quite contradictory, but in no one kingdom does it seem possible to bring together a score of practitioners whose views on this subject shall be in exact accordance. It might almost be thought that the subject is one which the most ancient fathers of medicine would have discussed, and finally agreed upon; and that writers in succeeding ages would have had nought to do but to quote from black-letter volumes. This is far from being the case, however; though the question has been the theme of many an interesting essay, and the matter of frequent discussion, particularly since the occurrence of

the Gardner Peerage Cause, in 1825.* But society at large is so deeply interested in the correct settlement of this questio vexata, that it would certainly long since have been decided, and the truth extracted from the mass of conflicting evidence surrounding it, were it not that the opportunities for obtaining correct data are really very few. It has been aptly observed, that "as it is difficult to conceal the termination of pregnancy, so is it equally difficult to ascertain its commencement;" and with regard to civilized life, at least, this is no

1. Is it your opinion, that a child born on the 8th December could have been the result of sexual intercourse either on the 30th January (being 311 days), or anterior to it?

 Is it your opinion that a child born on the 8th December could have been the result of sexual intercourse on the 7th February (being 304 days), or anterior to it?

3. Do you think that a child born on the 8th December, who has lived to manhood, could be the result of sexual intercourse on or after the 11th July; a period short, at least by two or three days, of five calendar months?

The two extremes of time alluded to in these questions are 311 (or at least 304 days) and 150 days. Hence, if Henry Fenton Jadis, alias Gardner, were the son of Lord Alan Hyde Gardner, he must either have been a five months or nearly a ten months and a half child.

Seventeen medical men were examined. Of these, five supported the view that the period of human utero-gestation was limited to about nine calendar months, or from 270 to 280 days. The remaining twelve seemed to maintain the possibility that pregnancy might be protracted to nine and a half, ten, or even eleven calendar months; and so, of course, to 311 days, the alleged term of gestation. The Committee was not convinced, however, by the majority; the decision being against the claim of Mr. Jadis' son.

^{*} The chief medical interest in this trial was owing to the following points:—In 1802, Lord Alan Hyde Gardner, captain of H.M. ship Resolution, arrived off Portsmouth, and was joined by his wife, Mrs. Gardner. She remained on board for three weeks, leaving for London on the 30th January; but the Resolution did not sail for the West Indies until the 7th February, and in the mean time communications were kept up between the ship and the shore. Lord Gardner returned home on the 11th July, of the same year. Mrs. Gardner bore a son on the 8th December, 1802, which appeared to be the fruit of an illicit intercourse between her and Mr. Henry Jadis. Lord Gardner succeeded in obtaining one thousand pounds damages, and a divorce: whereupon he married again, and on the 29th January, 1810, had a son born. The trial was caused by this son's claim to the Barony being opposed by the youth born on the 8th December, 1802. Hence the main questions put to each medical witness were three:—

exaggeration. From married women the information required can seldom be obtained; while in the case of single females, so many motives for the practice of deception exist, that their testimony must be received with the greatest caution.

It is usually admitted as certain that the ordinary duration of pregnancy is ten lunar months, or about nine calendar months, or forty weeks, or from two hundred and seventy-four to two hundred and eighty days. But the point which has to be solved is this,-May not gestation be protracted beyond this time, without the infringement of any law of Nature? It may be summarily replied, that from all which can be ascertained on the subject by the study of recorded cases; from all reasoning by analogy, for it has never been denied that the periods of dentition, puberty, the cessation of the catamenia in women, &c., are all liable to vary within certain limits; and from all arguments adduced from comparative parturition-for we know that, to a certain extent, the period of gestation is not precise among cattle-I say that all these circumstances seem to me to prove that the period of forty weeks is certainly not invariable. Hence the old argument of Nature being certain in all her laws, must not be applied to the present question.

Legislators have been so persuaded of the truth of this principle, that in many countries they have acted upon it in framing the laws. By the Romans the time of gestation was fixed at ten lunar months. The Code Napoléon ordains three hundred days as the duration of pregnancy, and allows legitimacy to be contested after this period. In Prussia the term ordained is three hundred and one days, thus permitting a latitude of three weeks. The Scotch enactments account a child a bastard who is born after the tenth solar month. While the Eng-

lish statutes—on which the American are founded—do not prescribe any precise number of days, but remain as when Blackstone wrote, in the year 1765:—"From what has been said it appears that all children born before matrimony are bastards by our law; and so it is of all children born so long after the death of the husband, that by the usual course of gestation they could not be begotten by him. But this being a matter of some uncertainty, the law is not exact as to a few days."*

One great difficulty which arises in discussing this question is, the fact that we are really unacquainted with the exciting cause of parturition. As it is a step in advance to know the full extent of our ignorance, a few remarks may be premised on this head; since it is impossible for us to remain contented with the devout remark of the Arabian physician, Avicenna-that at the appointed season labour comes on by the command of God,-The observation is very generally admitted as correct, that by far the greatest number of women complete the period of gestation in the fortieth week after the cessation of the menses; or in other words, that the duration of human pregnancy is commonly a multiple of a catamenial period, i.e., 280 days. It must not be inferred, however, that it is equally clear, that parturition necessarily occurs at what would otherwise be a menstrual period. Two hundred years have elapsed since this latter suggestion was first published by the illustrious Harvey; who, after making some observations on the way in which prudent matrons calculate, says, that they, "after ten lunar months have elapsed, fall in labour, and reap the fruit of their womb the very

^{*} Commentaries on the Laws of England. Fifth Edition, Vol. I., p. 456. Dublin, 1773.

day on which the catamenia would have appeared, had impregnation not taken place."* Dr. Rigby clearly entertains the opinion that this view is a correct one, for he writes :- "It is now ten years ago since we first surmised that the reason why labour usually terminates pregnancy at the fortieth week is, from the recurrence of a menstrual period at a time during pregnancy, when the uterus, from its distension and weight of contents, is no longer able to bear that increase of irritability which accompanies these periods, without being excited to throw off the ovum."+ To Dr. Tyler Smith, however, is due the credit of very plausibly attempting to show that the ovaria are the special organs which excite the uterus to the act of parturition. This gentleman endeavours to prove that not only is parturition essentially a menstrual period, and the mucous discharge tinged with blood-technically the "show"-which accompanies it, as well as the lochial discharge which follows, analogous to the catamenial flow; but also that the relation of the ovarian nerves to parturition is the same as the bearing of the pneumogastric nerves on respiration. In fact, that the periodical stimulation of the ovary is the exciting cause of parturition, acting by reflex action on the uterus through the spinal system of nerves; the ovarian nerves being the excitors, and the uterine the motors. It is also urged that when utero-gestation is prolonged beyond the ten menstrual periods, parturition is deferred until the following catamenial period; and, on the contrary, when it is brought to a premature termination, it is at what would have been a menstrual period that abortion usually takes

^{*} The Works of William Harrey, M.D. Translated for the Sydenham Society by Dr. Willis, p. 529. London, 1847. † A System of Midwifery, p. 85. London, 1844.

place. Indeed, according to Dr. Tyler Smith, there is in all women a tendency to abortion at the times represented by the recurrence of what, but for pregnancy, would have been a catamenial period.* The physiologists who oppose these views chiefly rely upon the following arguments:-

(1.) That Dr. Tyler Smith assigns no valid cause why the action at the tenth period-at the eleventh, if the period prior to suppression be included-should be so much more potent than at any other, except that by this time there is a much greater aptitude to contraction in the uterns itself, and an increased readiness to be thrown off on the part of the placenta: conditions which the objectors consider adequate in themselves to account for the result. (2.) That the period of gestation, although commonly a multiple of the menstrual interval, is by no means constantly so; the former often remaining normal, when the latter is shorter or longer than usual. (3.) Parturient efforts take place in the uterus, notwithstanding the previous removal of the lower part of the spinal cord. (4.) The removal of the ovaries in the later part of gestation does not interpose the least check to the parturient action, as Professor Simpson has experimentally ascertained. + (5.) That when the duration of pregnancy exceeds the ten menstrual periods, parturition is not deferred till the following period; and that the evidence given on the Gardner Peerage Case before the House of Lords in 1825-6, which Dr. Smith cites as favouring his views, is strongly against them. Dr. Samuel Merriman, who was one of the witnesses at the trial, has published a table showing that of 84 women, 33 were delivered in the fortieth week, 22 in the forty-first, 15 in the fortysecond, 10 in the forty-third, and only 4 in the forty-fourth. (6.) The evidence of comparative gestation is against Dr. Smith; inasmuch as experiments carried on under the direction of the late Earl Spencer, on 764 cows, each impregnated by a single coitus, show that although 284 or 285 days is the average term of gestation in this animal, yet an excess of a few days is not uncommon; gestation having been prolonged from 5 to 10 days in 111 out of the 764, and for 28 days in only one of this number. Moreover, it has been proved that in the mare, sow, sheep, goat, bitch, cat, &c., the usual period of gestation may be occasionally exceeded by as much as two or three weeks.

These objections have not been satisfactorily overcome by any arguments which I have read of Dr. Tyler

^{*} Parturition and the Principles and Practice of Obstetrics. Lecture

VIII. London, 1849. Also, Lectures on the Theory and Practice of Obstetrics. "Lancet," Vols. I. and II. London, 1856.

† Dr. Carpenter's Human Physiology. Fifth Edition, p. 819. London, 1855. Also, The British and Foreign Medico-Chirurgical Review, Vol. IV., p. 1. London, 1849.

[#] Journal of the Royal Agricultural Society of England. Vol. I., p. 165. London, 1840.

Smith's ; and it must be allowed that they seem to be fatal to his very ingenious theory. In fairness to this physiologist, however, it ought to be stated, first, that in some experiments on gravid rabbits, at the middle period of gestation, irritation of the ovaria by galvanism, or pinching with the forceps, brought on contractions of the uterus and vagina; which contractions continued, after the irritation was left off, until the fœtuses were expelled. Secondly, that one of the best facts in favour of his views is derived from the circumstance that in many of the lower animals ovulation and cestruation are going on at the very time of parturition. Thus, in the guinea-pig, for example, immediately that the young are dropped, the female admits the male, conception takes place, and a new utero-gestation commences, dating from the very hour of parturition. Nevertheless, that the hypothesis which has now been considered cannot be supported, is, I believe, the opinion of most physiologists. This fact is the more to be regretted since no perfectly satisfactory explanation can be substituted: for it can only be surmised that the cause of parturition is to be found in the maturity of the ovum; or in the placenta, which-having attained its full evolution as an organ of temporary functionbegins to degenerate, while its attachment to the uterus loosens. The author of the essay on The Physiology of Parturition, in the review from which I have quoted, well observes,-" The act of parturition was likened by Buffon to the dropping of ripe fruit; and we believe that, in seeking for its cause partly (to say the least) in that condition of the uterus and its contents which may be designated as maturation, we are justified by all the facts at present known to us."

Another obstacle to a satisfactory settlement of this question is owing to the circumstance that many physicians who have constructed statistical tables from the observation of a large number of cases, have commenced their calculations from different epochs. Thus the reckoning of some is calculated from the date of the cessation of the catamenia; of others, from the time of a single coitus; of a third class, from the day of quickening; and of a fourth, from the hour of conception, which they assert is known to many females by certain peculiar sensations experienced at the moment of conception. It is almost unnecessary to say that the observations of the first and second classes are alone deserving of any attention; while the most trustworthy views, probably, are those derived from calculating the duration of pregnancy from a single coitus.

A third impediment to our making exact calculations is the impossibility of fixing the date of conception, even when that of insemination is known. In other words, the interval which elapses between a fruitful intercourse and the actual vivification of the ovule is uncertain; but that the period is not insignificant, and that it may be interfered with by a variety of physical and moral causes, is highly probable. obvious reasons, no evidence on this subject derived from observations on the human female can be brought forward; but it is quite justifiable to make deductions from analogy. Now physiologists have long since proved that for impregnation to take place it is not necessary that the semen should be newly expelled by the male. Valentin states that, "On opening the body of a female mammal one or more days after it has received the male, semen may be found not only in the body and horns of the uterus, but also in the oviducts, and on the surface of the ovary. The spermatozoa are in vigorous movement. These may retain their activity

for a week or more in the female organs."* More than sixty years ago Haighton showed that conception does not generally take place in the rabbit till about fifty hours after insemination; a long period, considering that the ordinary interval between insemination and parturition is only thirty days. He found that division of the Fallopian tube before the expiration of two days prevented conception; while, by waiting longer, impregnation was not impeded by the mutilation.+ Hence it seems not improbable that by hereafter making a distinction between the date of insemination and that of fœcundation, less discordant views as to the duration of pregnancy may be entertained.

Three highly esteemed authors-Drs. Samuel Merriman, Reid, and Murphy-have each published valuable tables of cases, derived from their own practice, to show the date of delivery, as reckoned from the last day of the last catamenial period. Dr. Merriman's data were obtained from the births of 114 mature children; the dates being calculated from, but not including, the day on which the catamenia were last distinguishable. Dr. Murphy's similar cases number 168; while Dr. Reid's amount to 500. In the two following tables, arranged by Dr. Simpson, a comparative view may

+ The Philosophical Transactions of the Royal Society, Vol. LXXXVII.,

p. 159. London, 1797.

§ A Report of the Obstetric Practice of University College Hospital, London. P. 9. Dublin, 1844.

Lancet. April 13, 1850, p. 438; May 18, 1850, p. 596; July 20, 1850, p. 77; Sept. 3, 1853, p. 205; and Sept. 10, 1853, p. 235.

The Obstetric Memoirs and Contributions of James Y. Simpson, M.D., &c. Edited by Drs. Priestley and Storer. Vol. I., p. 335.
Edinburgh, 1855.

^{*} A Text-Book of Physiology. Translated from the German by Dr. Brinton, p. 641. London, 1853.

The Medico-Chirurgical Transactions, Vol. XIII., p. 338. London,

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be taken of the results obtained by these gentlemen in the 782 cases on which their observations are founded:—

DATES OF DELIVERY, CALCULATED FROM LAST DAY OF CATAMENIA.

Weeks.		Days.	Merriman.	Reid.	Murphy.
37th	From	252nd to 259th	3	23	12
38th	,,	260th to 266th	13	48	14
39th	,,	267th to 273rd	14	81	27
40th	"	274th to 280th	33	131	28
41st	"	281st to 287th	22	112	39
42nd	"	288th to 294th	15	63	21
43rd 44th	1 "	295th to 301st	10	28	25
and upwards	} "	302nd to 326th	4	14	2
- 0			114	500	168

To exhibit these facts more clearly they may be reduced into another form, and the weekly per-centage of deliveries shown.

PER-CENTAGE OF WEEKLY DELIVERIES FROM LAST DAY OF CATAMENIA.

Weeks.	Days.	Merriman.	Reid.	Murphy.
37th	From 252nd to 259th	2.65	4.60	7.14
38th	,, 260th to 266th	11.40	9.60	8.33
39th	,, 267th to 273rd	12.28	16.20	16.07
40th	,, 274th to 280th	29.00	26.20	16.66
41st	,, 281st to 287th	19.30	22.40	23.21
42nd	,, 288th to 294th	13.16	12.60	12.50
43rd 44th	,, 295th to 301st	8.77	5.60	14.86
and	302nd to 324th	3.50	2.80	1.20
1		100.	100.	100.

From the examination of these tables it clearly appears that considerable variations occur in the duration of pregnancy when the calculations are made from the last day of the last menstrual period. This irregu-

larity may be partly accounted for by the circumstance that although in most instances impregnation doubtless takes place within two or three days of the cessation of the catamenia, it need not necessarily do so. Whether conception can occur at any time during the interval between the two periods is uncertain; but in the present state of our knowledge it does not seem possible to state at what time after the cessation of the flow fœcundation is impossible. If, however, this were the only cause for the irregularity, we should of course obtain undeviating results by reckoning the date of the occurrence of labour from the time of a single coitus. The following table, by Dr. Reid, formed from the largest number of cases of conception from a single intercourse which has been yet collected by one author, may suffice as an answer to the question, whether the results so obtained are less variable or not. It consists of fortythree-with two exceptions-trustworthy cases of conception, the dates being calculated from a single coitus:-

	ys after a	single coitus	, delivery	occurred in
263	31		33	99
264	39	**	95	99
265	99	199	197	77
266	117	"	. 11	
270	**	"	"	77
271	11	10	22	23
272	55	11	**	"
273	22	"	**	"
274	**	**	**	.99
275	22	"	**	**
276	77	11	75	77
278	99	**	**	19
280	11	77	**	**
283	22	12	**	"
284	77	55	11	**
286	**	79	**	71
287	22	33	**	**
291	"	"	**	55
293	>>	79	99	77
296	99	33	77	"
300	22	"	22	"

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This table shows that the average duration of pregnancy, reckoning from a single intercourse, is about 275 days, or it may have a range from the two hundred and seventieth to the two hundred and eightieth day. It must also be remarked, that equally great variations are met with in thus calculating as in counting from the end of the menstrual period. Moreover, with regard to the last two cases in the table, it should be stated that the evidence derived from them is of rather a doubtful character. The first of these occurred in the practice of Dr. M'Ilvain, of Charlotte, North Carolina :- Mrs. S., a lady, was visited by her husband from a distance, on 1st July, 1847; he remained until the morning of the 6th, and did not again see his wife for nine months. Intercourse took place on the 1st, 2nd, 3rd, and 4th July. Shortly afterwards symptoms of pregnancy appeared; but parturition did not take place until 23rd April, 1848, being 293 days after the 4th July, or 296 after the 1st. The second history was communicated by Dr. Ashwell :- The catamenia terminated on the 25th January, and the husband left a few days after, and was absent six weeks. The lady was confined on the 27th November, being 300 days after the supposed fruitful intercourse, or 258 days after the husband's return. Dr. Ashwell imagines that the infant was not prematurely born, inasmuch as it was much larger than the patient's other children. Excluding these two cases from our calculations, it appears that 293 days was the longest period to which gestation extended in 41 instances, where a single intercourse took place.

To make this subject more clear and certain, we may compare the results now obtained with those which have been gathered from observations upon the lower animals; for although some of my readers may think that facts so derived are not applicable to the human subject, yet a little consideration seems to me to show that the argument from analogy is particularly trustworthy. M. Tessier's researches—conducted with unusual care through a period of forty years—on the time of gestation in 575 cows, from a single coitus, gave the following results:—*

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21 cows calved between the 260th and 270th days.
213
                            270th ,,
                                       280th
                            280th
321
                                       297th
                                   23
               "
                       at 298 days.
  6
              "
                       at 299
               between the 300th and 321st ,,
 10
575.
```

^{*} Mémoires de l'Académie Royale des Sciences de l'Institut de France. Tome II., p. 1. Paris, 1819.

Experiments on mares by the same writer proved that similar deviations occur. Of 447 mares, whose natural period of gestation is eleven calendar months, or about 335 days,-

96 258 35	foaled from the	329th 335th 359th	"	335th. 359th. 377th.
447	**	377th	"	419th.

The observations on asses, buffaloes, sheep, sows, rabbits, and bitches, showed that variations similar in degree occurred. Earl Spencer's experiments on 764 cows have been already alluded to; but it seems advisable to quote them here more fully, as they serve to corroborate the opinions advanced at the commencement of this chapter. The results obtained by this nobleman may be thus tabulated :-

				Cow-		Twins.
	lowscalved etween the		The pro-	10	15	
85	**	262nd and 275th days.		14	15	6
		on the 276th day	"	7	6	
14		OFFILE	"	10	2	2 2 3 5
18	11	OTOLL	11	11	4	9
32	33	02011	"			0
	331		33	16	11	9
35	33	280th ,,	21	15	20	***
39	39	281st ,,	"	20	18	1
47	**	282nd ,,	11	26	20	1
54	**	283rd ,,		30	24	***
66	- 22	284th ,,	**	33	33	100
74	11	285th ,,		29	43	2
60		286th ,,	**	22	38	
52	**	99741	"	25	27	
42	**	00041	"	13	28	ï
45	7.5	289th	9.5			1
	22		21	20	25	***
23	17	290th ,,	**	10	13	444
31	100	291st ,,	33	9	22	***
16	**	292nd ,,	11	5	11	
10 8 7 6	11	293rd	17	1	9	***
8	25	294th	11	1	7	914
7		295th ,.		3	4	***
6	**	90816	"	9	4	
2	**	997+h	-77	2	1	***
-	"	201611 33	33	1		***

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				200	Bull-	-
1	Cow calved on the		The produce was	***	1	***
1	**	304th ,,	"	1	***	1202
1	"	305th ,,	11	1	212	***
3	"	306th ,,	19	3	***	100
1	11	307th ,,	**	1	***	212
1	**	313th ,,	311	1	***	444
764				340	401	23

This table, like that of M. Tessier's, proves without a doubt that in the cow, when the date of impregnation was positively certain, yet the day of parturition was far from being precise and determinate. The average term of gestation in this animal seems to be 284 or 285 days; 314 of the cows having calved before the two hundred and eighty-fourth day, and 310 after the two hundred and eighty-fifth. None of those calves which were born before the two hundred and forty-second day were reared.

If, then, we are forced to admit that in the human subject, as in animals, the period of gestation is liable to considerable variations, the question naturally arises—What is the greatest extent to which pregnancy may be prolonged beyond the common period of gestation? A reply cannot very readily be given to this inquiry; for the subject has been so complicated by erroneous and rash hypotheses, as well as by the narratives of imperfectly observed cases, that it is difficult to sift the true from the false.

The obstetricians of the Celestial Empire allow a very wide margin. In a modern work on Chinese midwifery it is noted:—"The great pharmacopæia says that pregnancy generally continues for seven or eight months, and sometimes for one or two years, and in some rare cases even for four years, and this should be made known."* According to the Hindu medical Shástras, ten calendar months is allowed for the perfection of the fœtus in utero. The expulsion of the

^{*} A Treatise on Midwifery. A New Edition, published in the fifth year of Taou Kwong (1825). Translated from the Chinese by Dr. W. Lockhart. Published in The Dublin Journal of Medical Science, Vol. XX., p. 357. Dublin, 1842,

child is thus explained :- "At the tenth month the fætus acquires knowledge, and prays to God, and sees the seven heavens, the earth, and the inferior regions. By the air of the pelvis (opana bayu) the fœtus is then expelled, as an arrow is shot from a bow, and the child falls insensible to the ground. All his former knowledge is immediately forgotten, and on losing so many pleasing illusions, he cries."* M. Hamont, for some years the director of the School of Veterinary Medicine of Abou-Zabel, states that in Egypt the judges gravely decided that-" Children may remain in the mother's womb for four years. After five years this cannot be."+

Mons. A. Petit believed that gestation might be prolonged to the end of the eleventh or twelfth month, or even beyond this time; and asserted that cases proving this had occurred many times. Twenty-three of the most eminent physicians of the day agreed with the opinion of Petit, and signed a report to that effect. t The following very satisfactory case is adduced by Desormeaux, as proving that the term may be slightly prolonged beyond the usual period :- A lady, the mother of three children, became deranged after a severe fever. Her physician thought that pregnancy might have a beneficial effect on the mental disease, and permitted her husband to visit her; but with this restriction, that there should be an interval of three months between each visit, in order that if conception took place, the risk of abortion from further intercourse might be avoided. The physician and attendants made an exact

^{*} A Commentary on the Hindu System of Medicine. By T. A. Wise,

M.D., &c., p. 37. Calcutta, 1845. † Annales d'Hygiène Publique, et de Médecine Légale. Tome X.,

p. 204. Paris, 1833. ‡ Recueil de Pièces concernant les Naissances Tardives. Une Consultation, &c., délibéré à Paris, Janvier 22, 1765. Amsterdam, 1766.

note of the time when the husband's visits took place; and as soon as symptoms of pregnancy began to appear, the visits were discontinued. The lady was closely watched by her female attendants all the time. She was delivered at the end of nine calendar months and a fortnight by Desormeaux. The number of days is not given, but taking the shortest nine months we shall have 273+14=287; or if other nine months were those meant we might have 276+14=290 days.* Velpeau, in addition to eight cases published in 1829, has recorded another in which he distinctly felt the active and passive movements of the fœtus at the fourth month. Symptoms of labour set in at the end of the ninth month; but they were soon suspended, and did not return for thirty days. He believes that the gestation lasted for 310 days.+

Dr. Rvan attended a delicate woman, who menstruated the last week in February, 1826, quickened in July, had spurious pains in November, December, and January, and was delivered on the 28th February, 1827, nearly twelve months from her previous men-Such is the evidence, and here is the struation. corollary :- "I most solemnly declare that the case is a true one, and not fabricated to support any particular opinion. This is the longest instance of protracted pregnancy which has hitherto been recorded in British medicine." 1 Dr. William Hunter is said to have replied to a question on this subject :- "The usual period is nine calendar months, but there is very commonly a

^{*} Dictionnaire de Médecine. 2me Edition, Tome XIV., p. 437. Paris,

⁺ Traité Complet des Accouchemens, ou Tocologie théorique et pratique.

Tome I., p. 383. Paris, 1835.

‡ A Manual of Midwifery; or Compendium of Gynacology and Paidonosology. Third Edition, p. 133. London, 1831.

difference of one, two, or three weeks. I have known a woman bear a living child, in a perfectly natural way, fourteen days later than nine calendar months; and believe two women to have been delivered of a child alive, in a natural way, above ten calendar months from the hour of conception." The majority of the medical men examined in the Gardner Peerage Cause were in favour of protracted pregnancy; and Dr. Granville asserted that in his own wife gestation lasted at least 306, and perhaps 318 days. The only evidence that it did so, is that this lady missed her menstruation on the 7th April, on the 15th August she quickened, on the 7th February she was delivered; and the accoucheur, the patient, Dr. Granville, and "every one," on examining the large infant, agreed that it was a ten months' child. Mr. John Sabine gave equally valuable evidence as to his own wife, whose last period of menstruction took place about the 14th September, quickening occurred during the second week of January, but delivery was delayed until the 14th of August following.

The opinion of the American Court regarding the possible protraction of pregnancy, as elicited during a lawsuit for bastardy at the Lancaster Quarter Sessions, is deserving of our notice. In this case the prosecutrix swore that her child was begotten on the 23rd March, 1845, and was born on the 30th January, 1846, making the period of gestation 313 days. At the trial six American physicians and surgeons testified against the possibility of the protraction of pregnancy. On the other side five practitioners of medicine declared their belief in the occasional extension of gestation beyond the normal period, and in the possibility of its protraction to 313 days: Dr. Atlee, in particular, asserting that two cases "had occurred in his own prac-

tice, in which, by all the usual methods of calculation, the patients must have gone at least ten calendar months."* In charging the jury, the President of the Court held that protracted gestation for a period of 313 days, "although unusual and improbable, was not impossible;" and in accordance with this charge the jury found the defendant guilty. Dr. Meigs says he has "reason to believe that pregnancy may endure even beyond twelve months;"+ and he relates a casewhich seems chiefly to have been believed on account of the woman's appearance of perfect candour and sincerity in all that she said-where impregnation was deemed to have taken place in July, 1839, and in which delivery was not accomplished until the 13th September, 1840. The well-authenticated case of Albert Kranz, quoted by Schenk, is scarcely more extraordinary than several of the foregoing. In this instance the wife of Count Baruch de Vandal became pregnant, and carried the child for two years, so that when it was born it could walk and speak!

Many more examples, both from ancient and modern literature, might be quoted to prove that the narrators were convinced of the occasional occurrence of very protracted gestation. It is quite unnecessary to do this, however, since the histories are most unsatisfactory, and destitute of any facts approaching to proof. When we remember how easily women become the dupes of their own fertile imaginations; how necessary it often is, for the sake of reputation, that they should endeavour to deceive medical men; thow difficult it is to

^{*} The American Journal of Medical Sciences. New Series, Vol. XII., p. 536. Philadelphia, 1846.

† Obstetrics: the Science and the Art, p. 194. Philadelphia, 1849.

[†] Obstetrics: the Science and the Art, p. 194. Philadelphia, 1849.

The following anecdotes may serve as a guide to the explanation of not a few of the cases which have been from time to time brought forward:

The widow of a bookseller at Wolffenbuttel was delivered of a child

be accurate when the calculation is commenced from the cessation of the catamenia; and, in short, how varied and numerous are the sources of error that may vitiate the first impressions made by examining these cases,—we shall hardly be surprised at some of the extraordinary statements which have just been quoted.

To show that even the strictly medical evidence, derived from a physical examination, must be received with great caution, in cases of assumed protracted gestation, I quote the following case from Dr. Reid's essay:—

Mrs. F., married on the 8th May, had her catamenial period unexpectedly on that day. Shortly afterwards she was attacked by morning sickness: the abdomen gradually enlarged, and other symptoms of pregnancy followed. In the fifth month decided movements were felt; and everything apparently progressed favourably until the 18th December, which was thought to be the seventh month. There had been, however, an irregular uterine discharge every four or five weeks during the above period. At the

thirteen months after her husband's decease. The child, if begotten by him, was heir to his property, but otherwise, the goods and money went to distant relations. The child was declared legitimate, owing to the excellent character of the mother, and to its being thought probable that her delivery was delayed by the deep grief into which she was plunged by the loss of her husband. Shortly after this decision the lady was married to Christopher Misnerus, who had acted as shopkeeper in the business during her widowhood!

Victor Ratier relates the following romance of Mary of England, the third wife of Louis XII., who was left a widow shortly after her marriage. After the death of this king, who had no male issue, the throne was to revert to the young Comte d'Angoulème, who afterwards became Francis the First. The widowed queen had retired to the Hôtel de Cluny, and, in order to secure the regency, spread a report that she was pregnant; a supposition which (as we shall see hereafter) she hoped to carry out successfully. But Francis's mother, Louisa of Savoy, who saw (says Brantóme) how much was at stake for herself and her son, carefully watched the movements of one who wished to play the part of queen mother so much to her disadvantage. One day she was informed by her spies that Mary, as tender as she was ambitious, had made an assignation for that night with Charles Brandon, Duke of Suffolk. The mother and son, accompanied by four gentlemen of the highest rank at Court, surprised the lovers at a moment which generally allows of little solemnity; and required that the Abbot of Cluny should forthwith celebrate the nuptials in the adjoining chapel. This ceremony took place accordingly in the night of the 31st of May, 1515. The fruit of this impromptu marriage was the unfortunate Lady Jane Grey.

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date mentioned, pains came on at intervals, accompanied by a very free discharge, almost amounting to flooding, but no substance was passed. The monthly nurse arrived, and the practitioner who had been engaged to attend the lady was summoned. On his arrival, he examined the abdomen, and pronounced the patient advanced to the seventh month; remarking also that he could feel the limbs of the focus through the parietes of the abdomen. Simple remedies were prescribed, and the pains subsided by the next morning. The patient was kept in the recumbent position, the size of the abdomen now remained stationary, and the nurse—after waiting three months in the house—took her leave. The movements had continued as strong as before, but for the last three months there had been no return of the menstrual function; and the morning sickness was much more intense than formerly. The abdomen still further increased in size, and she was delivered on the 1st September of a moderately-sized child, eight and a half months after she had been pronounced by medical authority fully seven months advanced in pregnancy.

"Now here," says Dr. Reid, with great justice, "is a very fair sample of the usual case of very protracted gestation, which we meet with in the older authors. A surgeon, after making a cursory examination of the abdomen, decides that the lady is seven months advanced in pregnancy on December 18th, and therefore, by his evidence, the lady must have retained the fœtus in utero during a space of nearly sixteen months. But the arrested catamenia, and the intense sickness in December, much more probably point at the real commencement of pregnancy; the reasonable conclusion is, that this state lasted for about eight months and a half only, and that the medical attendant had deceived himself." To these remarks let me add the suggestion that this case might have assumed all the importance of one of the "Causes Célèbres," had this lady become a widow only a few weeks prior to her spurious parturition; and then fancying herself pregnant, and hence safe from detection, allowed sexual intercourse with a favoured admirer about the month of December. In some court of law the lady's immaculate virtue would have been appealed to in glowing terms, the impossibility of the talented surgeon's opinion being erroneous would have been insisted on,

the child would have been declared legitimate, and an undoubted instance of very protracted gestation would have been added to those examples which have been already credited by judges and juries.

Dr. Jörg fixes the duration of gestation as 280 days from the time of conception, and will not allow that this period is liable to fluctuation, as in the females of many classes of animals. He seems to think that instances of protracted parturition have been mistaken for protracted gestation. A case in point is detailed, in which labour commenced on the 280th day; but owing to the weakness of the pains and the length of the remissions, the child was not born until after the lapse of fourteen days.* No doubt many medical men would have set down such a case as one of gestation prolonged to the 294th day. I am acquainted with the history of a more extraordinary case, which may be briefly related, as there is no doubt in my mind that it is perfectly authentic The chief facts as detailed by my patient to me are these :-

Mrs. F., a lady of delicate health, forty-one years old, was delivered of her third child, in Manilla, on the 10th March, 1847. When the infant was fourteen days old it was weaned; the climate, it is said, being too hot to allow of European ladies suckling their offspring. At the end of the next month the catamenia came on, and after continuing for four days ceased on the 30th April. The courses did not again return, but my patient believes that she did not become pregnant until the 20th May; while she is certain that intercourse never took place after that date, on account of the serious illness of her husband. This gentleman died on the 31st August, and Mrs. F. soon afterwards returned to England. She calculated that her labour would come on about the middle of February, 1848; as it ought to have done, supposing her opinion as to the day of fecundation correct. If we reckon in the usual manner, and say that labour should have supervened 280 days after the last catamenial period, it will be seen that delivery ought certainly to have taken place on the 4th February; but if we adopt the better plan—so seldom possible, however—and calculate 275 days from the time of the fruitful coitus, then the accouchement was to be expected on the 19th February. Now it is remarkable that labour pains first manifested themselves on the 18th February, so that everything was prepared for the immediate birth of the infant. But at the end of a couple of hours the pains went off, and did not return till the next day. Again

^{*} Opus jam citat., p. 238.

they ceased for twenty-four hours, and again returned; and this happened every day for three weeks. Sometimes only two or three pains were experienced, sometimes the parturient efforts came on frequently for half-anhour or a little longer and then subsided. She was delivered of a live girl, remarkable for its size, on the 11th March; being twenty-two days—for it was leap-year—from the 19th February, or 297 days from the last coitus.

Now, it must not be imagined from the foregoing that I agree with Dr. Jörg, and believe that all the cases in which gestation continues beyond 280 days are merely examples of tardy labour. On the contrary, it seems to me that such a position is quite untenable. I would rather say that we are in a position to assert positively that gestation may be prolonged beyond the 280th day; but that no perfectly satisfactory instance is known in which the time has been extended for more than three or four weeks, taking the date of conception from a single coitus. In fact, we may even go farther without incurring the charge of rashness, and say that all recorded experience of any real value, and all experiments upon animals, teach us that it is in the highest degree improbable that utero-gestation in the human subject has ever been prolonged beyond ten calendar months.

The only certain data for reckoning the time of labour are those depending on the known time of conception. It has been proved that the average duration of pregnancy when computed from this event is about 275 days. But it is obvious that reliable and exact information on this head can only very rarely be obtained; and hence the term must be calculated from the date of the cessation of the catamenia. To effect this readily we cannot do better than follow the plan of most German obstetricians, who learn the probable day of delivery thus:—The date of the last menstruation being given, they calculate three months backwards, and add seven days. For example, suppose the 20th January to be the last day of the last menstrual period,

labour will be due about the 27th October,—i. e., on the 280th day.

Dr. Charles Clay has attempted to prove that the term of utero-gestation is regulated by the ages of the parents; and he endeavours to establish this proposition by the examination of recorded experiments on animals, as well as by the investigation of some twenty authentic instances of pregnancy resulting from a single act of coition in the human subject. In these latter cases, one prominent fact is said to be undeniably illustrated,—viz., "that the younger the parties concerned, the shorter the term of utero-gestation; and, vice versa, as age increases, the term of gestation is proportionably lengthened."* By placing in juxtaposition the few cases on which full reliance can be placed, it will be seen that this statement seems to be correct:—

At		121	years,	the	term	of	gest	ation	was	264	days.
**		15								267	**
33	15 to						4			267	"
75	16 to	17								270	1)
**		19			9					272	11
13		25	14.							274	"
99		30								276	**
"		35	*	10			14.			278	111
22		44						1		284	"
12		52								290	"

In the preceding examples the mother's age alone is given; although when Dr. Clay maintains that the duration of utero-gestation is definite and regulated by age, he means that in order to arrive at accurate conclusions it is necessary to take into the calculation the age of both parents, and to strike a mean between the two. Thus, suppose a female of 20 to cohabit with a male 30 years old, a result may be expected nearly equal to

^{*} Observations on the Term of Utero-Gestation. By Charles Clay, M.D., Manchester, p. 9. London, 1855.

an age of 25. To be still more exact, it is thought that a slight allowance should be made for the well-known fact that the female arrives at maturity earlier than the male; and hence, taking the same figures, a female at 20 and a male at 30, we should fix upon 24 instead of 25; or vice verså, a female at 30 and a male at 20, the result would be, not 25 or 24, but 26. Before the truth or fallacy of these propositions can be substantiated, however, a large number of careful observations by independent observers must be collected; though it may be justifiably conceded, even at the present stage of the inquiry, that Dr. Clay's views are not only rather ingenious, but so far sufficiently supported to merit further investigation.

In conclusion it may be mentioned that there is a popular belief, especially prevalent in fishing towns where the date of a fruitful intercourse is often more positively known than in other places, that when the time of gestation is longer than usual the produce will very probably be a male child. This opinion is slightly corroborated by Earl Spencer's observations on cows. In examining these experiments we ought to exclude from our calculation those cows which calved before the 260th day, and after the 300th, as being anomalous We shall then find that 233 cow-calves, and 234 bull-calves were produced by those 489 cows. whose period of gestation did not exceed 286 days: while the 243 cows whose period exceeded 286 days, gave 90 cow-calves, and 152 bull-calves. Moreover, it may be mentioned that in my own record of cases I find that children of much greater weight than ordinary have almost invariably been males; and this increase in size has very commonly been attributed by the mothers to their having gone a longer time than their

calculations had led them to expect. On examining Dr. Murphy's cases it appears that out of 90 instances in which the mothers were not delivered until after 280 days from menstruation, 43 per cent. of the children born were girls, and 57 per cent. were boys. On the other hand, we have the statement of Tessier, that he ascertained beyond any doubt that the protraction of gestation was neither influenced by the age, constitution, or food of the animals; nor by the size, sex, or strength of the fœtus.

CHAPTER V.

THE PREMATURE EXPULSION OF THE FŒTUS.

1. Introduction:—definition of the terms abortion, miscarriage, and premature labour.—2. Causes of abortion:—as they are accidental:—as they are due to some deranged state of the maternal health:—as they can be traced to some morbid condition of the uterus or its appendages:—and as they arise from disease of the embryo or its membranes.—3. Symptoms:—in the early days of gestation:—at an advanced stage of pregnancy.—Inversion of the uterus after abortion.
4. Diagnosis:—the distinction between the menstrual flow and the hamorrhage of an early abortion.—5. Prognosis:—in the first or second months, the danger slight:—the hamorrhage the chief source of danger.—6. Treatment:— prophylactic or preventive measures:—plan to be pursued when expulsion appears unavoidable.

Introduction.—The abrupt termination of pregnancy by the premature expulsion of the fœtus is of frequent occurrence; the number of mothers who pass through the child-bearing epoch of life without aborting once, or perhaps oftener, being small. Although this accident is often the cause of alarming symptoms as well as of much suffering at the time of its occurrence, and not uncommonly proves the source of many months of ill-health subsequently, yet it is seldom fatal to the life of the parent. Indeed, the very large quantity of blood which a woman may lose under these circumstances is quite surprising; and no less astonishing is it to witness the rapid way in which, under skilful

treatment, she often recovers from the immediate effects of the loss.

The expulsion of the ovum may take place at any period of gestation. When it occurs during the first sixteen weeks, it is often spoken of as abortion; when between the end of this period and the twenty-eighth week, as miscarriage; and when, after the latter period, but before the completion of the full term, as premature labour. The most simple subdivision, however, and therefore the best, is into abortion and premature labour: the former including all cases which occur before the twenty-eighth week, or seventh lunar month, inasmuch as the expulsion is invariably fatal to the offspring either previous to or just after birth; the latter including the cases which occur after the twenty-eighth week, when the fœtus may often, with care, be reared. The terms "abortion" and "miscarriage" may be conveniently employed as synonymous expressions. Until the present reign, the law discriminated between the crime of producing abortion at an early period of pregnancy, and of doing so in a woman quick with child. No such subtle distinction, fortunately, now exists; for, as I have before said, the expulsion of the fœtus or infant by criminal violence, at any period of pregnancy, is regarded as an abortion, and is punishable as a felony.*

It is commonly believed that early, especially first pregnancies, have more frequently a premature termination than those which come after. According to the experience of Mr. Whitehead—who, as surgeon to the Manchester Lying-in Hospital, has had valuable opportunities for investigating such questions—this is not

^{*} See Note, Chapter II. Section 6, p. 71.

the case. On the contrary, he is inclined to believe that "the third and fourth, and subsequent pregnancies. and one or two of the last,-those, namely, which occur near the termination of the fruitful period-are most commonly unsuccessful.* Although abortion may occur at any period of utero-gestation, yet it is more frequent at some stages of the process than at others; and it is undeniable that it happens more commonly during the early months than subsequently. partly due to the comparatively slight causes which about this time suffice to induce hæmorrhage, and consequently expulsion. The mucous membrane of the uterus, then transformed into the decidua, is very vascular; and blood is readily effused into the space which originally exists between the chorion and the decidua reflexa. Moreover, it seems to me probable that the uterus is more irritable during the first three months than it is afterwards. The following table by Mr. Whitehead shows the respective periods of 602 cases of abortion which occurred under his own immediate observation. It must be stated that each figure in the first column embraces a period of four weeks, extending from a fortnight before to the same length of time after the month indicated. Moreover, as abortions happening earlier than the seventh week of uterine life are so frequently and closely simulated, both in married and unmarried females, by certain uterine discharges. the result of disordered menstruation; therefore, events said to have taken place at this early period-except those where the escape of an ovum was undoubtedly proved—have not been included in the report.

^{*} On the Causes and Treatment of Abortion and Sterility, &c., p. 247. London, 1847.

PREMATURE EXPULSION OF THE FŒTUS.

A TABLE SHOWING THE PERIOD OF PREGNANCY AT WHICH ABORTION OCCURRED IN 602 CASES, &C.

	d of Pre	ortic		Number of Births at each period.	Number Still-born.	Number Living at Birth.	Number Living at the end of a Month after Birth.
2	months			35		_	
3	months			275	_	- 11/	- 1
4	months			147		_	=
5	months			30		_	-
6	months		-	32	24	8	0
7	months			55	38	17	3
8	months	1.	8	28	23	5	1
	TOTAL			602	85	30	4

Of the eight children indicated in this table, as having been born alive at six months, seven perished within six hours after birth, and only one attained to the age of ten days. Of the seventeen born alive at seven months, the majority lived over several days, a few to the end of the third and fourth week, and three were alive at the end of nineteen months. Eleven of those born alive at seven months, and three of the five born alive at eight months, perished from disease of a specific nature inherited from the mother. In three of the cases the event was attended with fatal consequences to the mother: one, in which delivery occurred at the seventh month, being a case of placenta prævia, where the expulsion had been preceded for several days by a constant and profuse hæmorrhage; one was a case of malignant degeneration of the uterus; while the third was a case of twins, at about the seventh month of their uterine growth, in which delivery was followed by alarming prostration, and succeeded by death on the sixth day, with all the symptoms of uterine phlebitis.

In cases of premature delivery it is sometimes a matter of considerable importance to determine whether a child was born alive, even though it may certainly have perished shortly afterwards. This may particularly be the case in contested lawsuits relating to the inheritance of, or succession to, property. The question as to what constitutes a live birth might also be raised. At a meeting of the Obstetrical Society of Edinburgh, in 1854, Dr. Keiller exhibited a premature feetus which was born alive in the fourth month; and at the same time referred to some recent cases in civil

jurisprudence in which the question of live birth was held to be established without any evidence of that which was formerly demanded—respiration or crying. The mere muscular movements of the limbs or the features, independent of any signs of respiration, having been ruled as sufficient evidence of a child being born alive, is therefore now held to be ample enough proof of what is termed in such investigations "live birth." The following are the chief points of interest in Dr. Keiller's case:—

On 17th June, 1854, this gentleman was called to Mrs. R., who was about to abort. She had miscarried a year previously, when seven months pregnant, and now considered herself in the fourth month, having last menstruated on the 8th February, and quickened on the 8th June. The feetus was soon born, and as the heart was beating vigorously, together with the vessels of the cord, the fœtal circulation through the attached placenta was allowed to continue some time, in order to observe the reflex movements of the limbs, face, and respiratory muscles which took place. At first the muscular reflex contractions were very marked; and on touching the feet and hands, the limbs were immediately drawn up and moved about. On blowing upon the face, the lower part of it was tremulously moved, and the mouth opened; and three or four times an attempt to respire or gasp, accompanied by an apparently respiratory movement of the chest, took place. On cutting the cord, and allowing about a drachm of blood to coze from its feetal extremity, the heart's action immediately became quicker, and one or two thoracic convulsions afterwards followed. The heart's action gradually became more feeble, but pulsations occurred for nearly an hour. The feetus weighed 91 oz., in length it measured 8 inches, and the placenta with attached cord weighed about 6 oz. The eyelids were adherent, the nose and ears closed, the mouth being open; the membrana pupillaris was entire; and on opening the chest, the situation and appearance of the lungs and other organs were characteristic of the apparent age.

It has been already remarked that when the fœtus is expelled before the twenty-eighth week of utero-gestation, it either dies immediately or very soon after birth. Possibly some very few exceptions to this rule may be found; and the following would seem to be one:—In the year 1748 a woman was delivered of a male fœtus, precisely six months after her previous accouchement. The child was puny and weak to excess; it did not cry, and it seemed hardly able to breathe; the eyes were closed;

the limbs were flabby and relaxed; and some little movement, with a warm surface, were the only signs of life exhibited. It was carefully preserved from cold, and fed with a little lukewarm milk; but it uttered no cry, and voided no excrements. At the end of four months the child began to cry, to void excrements, to move its body, to suck, and to grow like other children; and that so well, that in about sixteen months after its birth, it surpassed other children of the same age in strength.*

The data by which the age of the embryo can be ascertained are deserving of notice; inasmuch as it is often advantageous to be able to give an opinion as to the period to which the intra-uterine life has advanced. The following statements are, however, to be regarded as affording an approximation to the truth, rather than as being unconditionally exact: and hence, in any given case, the physician must form his opinion not from one sign alone, but from a consideration of the majority of the characters which the fœtus presents. The chief points to which I would direct attention are as follows:—

From the time of impregnation until the fifteenth day, the embryo is seen only as a minute, semi-transparent, gelatinous, greyish-coloured mass; presenting no distinct formation, even when examined by the microscope; and only detected at all with very great difficulty by a lens. Indeed, if the ovum be expelled within six weeks from conception, it is scarcely possible to find the embryo in the great majority of cases, owing to its minuteness, and the coagula of blood in which it is enveloped. Burns examined three uteri, within the first month of gestation, where expulsion had not occurred; and yet, under these favourable circumstances, he could not discover it. Probably the earliest embryo which has been seen is that mentioned by Yon Baer, in an ovum of about fourteen days.

coccurred; and yet, under these favourable circumstances, he could not discover it. Probably the earliest embryo which has been seen is that mentioned by Von Baer, in an ovum of about fourteen days.

An embryo of one calendar month weighs about twelve grains, and is six or eight lines long. It has been roughly compared to a grain of barley, or to the common house-fly, or to a small worm curved upon itself; its head is distinguishable, constituting half of the entire embryo; the eyes are placed laterally, and consist of two black points, surrounded by a mem-

^{*} Essai sur l'Education Médicinale des Enfans, et sur leurs Maladies. Par M. Brouzet. Tome Premier, Note, p. 37. Paris, 1754.

branous circle, representing the lids; the mouth is triangular, and wide open, the rudimentary tongue being discernible; the bronchial clefts have not quite disappeared; a quadrangular mark behind and below the upper jaw indicates the situation of the external auditory canal; the brain is represented by a little grey mass; the rudimentary spinal cord is evident; and the extremities are to be distinguished as leaf-like appendages. The omphalo-meseraic are the first bloodvessels developed; and from these the vena porta is formed, the heart first appearing as a dilatation of the latter. This dilatation is separated by two contractions into three portions; two parts forming an auricle and a ventricle, and one the bulbus arteriosusthe rudimentary aorta. It has been stated that the pulsations of the heart have been recognised as early as the fifth week at the upper part of the left side of the abdomen. The circulating fluid is at this time colour-less.—The chorion is smooth internally, and covered externally with small villi; and the umbilical vesicle is large, and connected with the intestine by the ductus omphalo-entericus. This duct, with the vasa omphalo-meseraica which accompany it, and the pedicle of the allantois, forms part of the umbilical cord, which begins to be developed at about the fifth week. A double sheath, formed by the chorion and amnion, encloses these structures. The urachus, with the umbilical vein and two arteries, constitute the chief portion of the cord at a later period of gestation.

An embryo of two months weighs from six to eight drachms, is about one inch and a half in length, and somewhat resembles a large kidney bean. The head is very large; the extremities are quite visible; the eyes are prominent, and partly closed; the lungs, liver, and Wolffian bodies exist; the heart is covered in, and its septum developed; and the first centres of ossification have appeared in the clavicle and in the lower jaw. Moreover, the villi of the chorion have become accumulated at one spot, forming the placenta; and the umbilical cord is thick, and the vessels straight, though they now begin to assume a spiral direction. Development henceforth goes on rapidly, the features becoming in part well-marked, and the

extremities well-formed. Hence we find that-

An embryo of three months weighs from one and a half to rather over two ounces, and when stretched out measures between three and four inches. Ossification has progressed at several points; and the rudiments of the muscles are formed. The head is heavier than the rest of the body; the dental sacs make their appearance in the upper and lower jaws; each pupil is closed by the membrana pupillaris, and the eyelids coalesce, or nearly so; the mouth is large, and the lips well-formed; the heart is large as compared with the body, the proportion being as 1 to 50, whereas at birth it is as 1 to 120, and in the adult about 1 to 150; and the thymus spleen, pancreas, and salivary glands are visible. The external genital organs are also of considerable size in proportion to the rest of the body, though the sex is not discriminative; and the rudimentary kidneys, with the testicles or ovaries are in course of development.—The membranes are larger than the egg of a goose; the membrane decidue are in close contact; the umbilical vesicle, allantois, and the omphalo-meseraic vessels have collapsed; and the placenta is distinctly isolated.

A factus of four months varies from four to six ounces in weight, and is five to six inches long. The skin is slightly red, and rather dense; the brain is smooth on its surface, there being no appearance of convolutions; the small ossicula auditus are ossified; the supra-renal capsules are as large as, or even larger, than the kidneys, the latter being voluminous; the sex is distinguishable; and there is meconium in the intestines. More-

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over, the umbilicus is situated near the pubes; and the chorion and amnion are in close contact all round. Mons. Cazeaux states that while he was Interne at the Hôtel Dieu, he received a fortus that had scarcely reached the fourth calendar month; but which lived for four hours after its birth.

A factus of five months weighs about one pound, and is some nine or ten inches in length. Its head is in size one-third of the whole, and has short scattered hair upon it, of a silvery lustre; there is a slight appearance of fat in the arcolar tissue; the eyelids are adherent, and the pupils closed by the membranæ pupillares; the brain presents slight inter-lobular depressions; the germs of the permanent teeth may be perceived; the nails are slightly formed; the lungs are small and solid; the heart is still voluminous and beginning to assume an oblique direction instead of being vertical as before, the auricles are larger than the ventricles, and the ductus arteriosus and pulmonary artery are equal in development; the liver is large, while the gall-bladder is perceptible; and the muscles are becoming fibrous. During this month the fætal movements have become appreciable to the mother.

A fatus of six months has a weight of two pounds, and is ten or eleven inches long. The head is to the body as 1 to 4; the brain is a greyish mass; the hair loses its silvery lustre, and becomes darker; the eyelids are still agglutinated; ossification has proceeded to a considerable extent; the lungs are small, solid, and of a reddish colour; the heart is rather smaller than before, and the foramen ovale at the lower and back part of the septum auricularum is now at its greatest size; meconium of a deeper colour than hitherto is found in the cæcum; and in the male the testicles are just apparent in the abdomen, lying on the psoæ muscles, and gradually with-

drawing from the kidneys.

A factus of seven months weighs from three to four pounds, and measures between thirteen and fourteen inches in length. The skin is thick, and beginning to be covered with a white unctuous matter; the body is round and plump, from the deposition of fat in the areolar tissue; ossification is rapidly advancing throughout the skeleton; the nails are tolerably firm, but do not reach to the extremities of the fingers; valvulæ conniventes appear in the small intestines, and meconium is found in the colon as well as in the execum; the eyelids are no longer closed, and the membranae pupillares are less apparent; the liver is of considerable size, the left lobe being almost as large as the right, and the gall-bladder contains bile; and the testicles are drawn almost in contact with the abdominal rings. The the testicles are drawn almost in contact with the abdominal rings. ancients entertained a conceit that an infant born at seven months could live, while one at eight months was almost sure to die. It is hardly necessary to observe that the capability of living in a fœtus increases in proportion as it advances towards the natural period of delivery; and the propagation of the opposite opinion could only have arisen from the prevalent belief in the harmony and powers of certain numbers with which philosophers were formerly infected. As Haller points out, the Pythagorean number Seven was regarded with great favour.

The factus of eight months weighs from four to five pounds, and is from fifteen to sixteen inches in length. The quantity of fat beneath the skin has increased, and the hair and nails are well developed; the sebaceous matter on the skin is more distinct; the membranæ pupillares have disappeared; the surface of the brain is grooved, but there are no regular convolutions; and the testicles are found in the inguinal canal or in the scrotum, or the left gland is in the scrotum, while the right is found about the

external ring.

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The fætus of nine calendar months, i.e., of maturity, weighs from six and a half to seven and a half pounds avoirdupois, and has an average length of between eighteen and twenty inches. The male infant is usually rather longer and heavier than the female.* Great deviations in weight and length are sometimes met with. The heaviest child I have noted in the register of my own practice was a male, and weighed twelve pounds four ounces; in which instance delivery of the head was accomplished by the natural efforts alone, though there was so much difficulty with the shoulders, that the infant died during the birth. Dr. John Ramsbotham has delivered a woman of a child weighing sixteen and a half pounds; † Dr. Bloxam with Mr. Owens had a case of difficult delivery, in which the child weighed seventeen pounds twelve ounces, while its lengthwas twenty-four inches; Dr. Waller relates an instance where he effected delivery by the long forceps, after the woman had been thirty-six hours in labour, of a male infant which weighed fifteen pounds fifteen ounces, and the circumference of whose head, measured at the orbital processes, was sixteen and a quarter inches ;§ while lastly Dr. Meadows has met with an instance in which a male child weighed eighteen pounds three ounces, and was thirty-two inches long. The infant presented by the breech, and lived for five hours after its birth. |-On the other hand, some children born alive at the full time, have been known to weigh less than five pounds. - In a twin pregnancy the weight of each individual feetus is less than that of a feetus not a twin, though the combined weight is greater. Dr. Clarke found that the average of twelve twins was eleven pounds avoirdupois each pair; the heaviest being thirteen pounds, and the lightest eight pounds and a half.—The head of the mature child is large and well covered with fine hair; the features are perfect, and the limbs plump and firm; the skin is of a clear red colour, and usually thickly covered with vernix caseosa, which consists of desquamated cells of epidermis and fatty matter; and the surface of the brain presents convolutions, though the organ is pulpy, and the difference between

^{*} This difference in weight and height between the two sexes continues—except for three or four years—during life. The following Table, drawn up by M. Quetelet, well shows the comparative weights of the two sexes:—

	lb. avoir.		lb. avoir.
At birth the male weighs	. 7.05	The female weighs	 . 6.41
At one year of age	. 20.84	" "	. 19.38
At five years of age	. 34.78	1) 11	. 31.67
At twelve years of age .	. 65.76	,, ,,	4 65.76
At fifteen years of age .	. 88.69	22 22	. 89.03
At thirty years of age .	140.37	11 11	121.80

And so on, in a corresponding ratio, up to the age of ninety. This exhibits also the effect of the earlier accession of puberty in the female, giving her the advantage between the ages of twelve and fifteen.

† Practical Observations in Midwifery. Second Edition, p. 174. London, 1842.

± Lancet, p. 477, December 22, 1838. The sex of the child is not mentioned in the report; but Dr. Bloxam has informed me that he believes it was a male.

§ Transactions of the Obstetrical Society of London, Vol. I., p. 310. London, 1860.

| Medical Times and Gazette, p. 105, August, 1860.

the white and grey matter is not very distinct. Ossification has also advanced considerably throughout the whole skeleton; and the muscles, nerves, &c., are firm and well developed. -The placenta at maturity weighs from eighteen to twenty-four ounces, the average being one pound five ounces avoirdupois; while it is commonly some eight inches in diameter, and one inch in thickness at its centre. Cases are recorded by Wrisberg and Stein, where this organ has been so greatly hypertrophied as to weigh in one instance three pounds, and in another six.—The average length of the umbilical cord is now about twenty inches, though it has been found as short as four, or even shorter; while Baudelocque has seen it measure fiftyseven inches, Gardien refers to an instance where it was five feet, and Dr. G. Thomson, of Boston, U.S., once found it to be five feet nine inches. The greater the quantity of gelatinous matter in the interspaces of its fibrous tissue, the thicker will the cord be. The funis has been found attached to other parts of the body besides the umbilicus: and Meckel says he saw a preparation in the Anatomical Museum at Brussels where it arose from the head of the fœtus. It may also be found knotted in one or more places, and coiled round the feetal body, or so tightly wound round one of the extremities as to cause atrophy, or perhaps even amputation of the limb.

—The new and painful sensations experienced by the child on passing into the world from the warm body of the mother, cause it to make certain efforts, which end in inspiration and crying. The lungs thus become thoroughly inflated, and the circulation of the blood through the pulmonary vessels supersedes the use of the foramen ovale and ductus arteriosus. So also the blood from the lower extremities being unable to force its way along the umbilical arteries, passes through the ascending vena cava into the right auricle and ventricle, and so into the lungs, to be purified and re-distributed. By degrees the foramen ovale closes; the ductus arteriosus, ductus venosus, and umbilical arteries are obliterated; and the normal circulation is permanently established.

Granting that an infant—as a general rule—is not destined to reach maturity before the end of nine calendar months, the question has sometimes been raised as to the shortest period at which a perfect, full-grown infant may possibly be born. Leuret and a few other writers have maintained that infants occasionally reach maturity of development as early as the end of the seventh month; but I know of no experienced modern author who in any way supports this opinion. Were it true, it might not unreasonably be supposed that a child so prematurely developed could by accident be sometimes brought into the world at the fifth calendar month; and it ought then to have an equal chance of life with an ordinary seven months' infant. But is there any practitioner living who has ever met with an instance where

a fœtus born at the fifth month has been reared? It is true that the following case has been recorded by Professor John W. Francis, of New York; but it is far from satisfactory, inasmuch as the scientific reasons for believing the age of the fœtus to be only twentythree weeks are not given. The particulars are these: -Mrs. B. was delivered, after protracted sufferings, of a dead male child. Twenty months afterwards, in the year 1832, she aborted. By one powerful effort the entire ovum was expelled. Mr. Francis fortunately arrived at this crisis, and had the whole mass immersed in a vessel of tepid water, while he attended to the mother. On afterwards rupturing the membranes, he perceived a fœtus, "apparently of some five months and upwards of growth. The cord was divided, and more than usual care taken with the child; a fillet or ribbon was applied round its head, which seemed unusually large, and the body wrapped in cotton. unremitting attention on the part of a competent nurse, the fondest wishes of the parents were ultimately realized; and the daughter, in the enjoyment of excellent health, has at the present writing completed her seventh vear. Subsequent inquiry with the parents concerned, made the age of this premature offspring at birth a fœtus of the twenty-third week of pregnancy."* Notwithstanding this history, I believe if we allow that thirty-five weeks, or 245 days, is a period at which maturity of development may be reached, we shall be making a statement difficult of proof: but I entertain no doubt that mature infants have been born at 259 days, or thirty-seven weeks. There is, indeed, no sound reason why some few fœtuses should not grow at a

^{*} A Treatise on the Diseases of Infants. By C. M. Billard. Translated from the third French Edition by Dr. James Stewart. Appendix, p. 612. London, 1839.

greater rate than others: and just as the time of uterogestation may sometimes be prolonged perhaps to allow of increased fœtal development, so doubtless it may occasionally be shortened when maturity has been reached in a rather shorter time than ordinarily.

Morgagni and Desormeaux entertained the opinion that abortions with female feetuses were more common than with males: probably because the boys born at the full term exceed the girls in number. I can quote no fact, however, in support of the observation; and I do not think, from my own experience, that it is true.

- 2. THE CAUSES OF ABORTION. These are very numerous. By one author or another, almost every action of daily life has been said to be likely to induce Hence it is better for the sake of clearness to resort to some classification, arbitrary though such may be. Some writers treat of the predisposing or exciting, and the immediate causes; but there are many objections to this subdivision. Others speak of the causes which act indirectly by destroying the fœtus, and such as have a direct influence by inducing uterine contractions. As the most simple plan, it seems useful to consider the causes under four heads; viz.: 1. As they are accidental; 2. As they are due to some deranged state of the mother's health; 3. As they can be traced to some morbid condition of the uterus or its appendages; and 4. As they arise from diseases of the embryo or its membranes .-
- 1. The Accidental Causes.—The most common of these are violent mental emotion, sudden agitation from fright, great bodily fatigue coupled with mental anxiety, and severe pain. Then we find abortion resulting sometimes from the effect of hysteric convulsions, from immoderate laughter, from the straining produced by

dysentery and diarrhoea, and from blows and falls; as well as from occurrences generally which suddenly disturb the equilibrium of the circulation, or strongly affect the nervous system, or have a direct tendency to separate the ovum from its uterine connexions. though the uterus is suspended in the maternal pelvis in the way best calculated to prevent its being affected by sudden shocks, yet the connexion of the thin and fibrous decidua-this tissue having lost the spongy characters it presented before impregnation-with the uterine walls is so fragile that slight accidents will sometimes effect a partial separation, and give rise to the effusion of blood. Should the clot be large, its presence between the uterus and decidua must interfere with the nutrition of the ovum; and hence give rise to the death of the fœtus and abortion.

The uterus being in reflex relation with many important organs, it can readily be understood that diseases of the latter may induce uterine contractions. Dr. Tyler Smith has shown that irritation of the mammary nerves may be a cause of the latter; as when abortion occurs during lactation, from the excitation produced by constant suckling. On this principle Scanzoni has recommended the induction of premature labour to be effected by the application of an exhausting apparatus to the breasts. So irritation of the gastric nerves must be cited as a cause of abortion; though it is often astonishing to what an extent-even to such a degree as to cause death-nausea and vomiting may proceed without exciting the uterus to expel its contents. Indeed, some authors go so far as to say that a sick pregnancy never ends prematurely; but for the word "never" it is better to substitute "rarely." Then we must mention irritation of the trifacial nerve produced by cutting one of the late molars, or by the extraction

of a tooth; irritation of the renal nerves from gravel, or the employment of cantharides; irritation of the bladder from a calculus, or of the ovaries from congestion and inflammation; and excitement of the nerves of the rectum from hæmorrhoids, ascarides, or the injudicious use of drastic purgatives, such as aloes, gamboge, senna, &c. Lastly, irritation of the vagina and uterus will occasionally excite abortion; whether the irritation be due to the violent jolting of horse exercise, riding over rough roads, dancing, &c.; or to excessive sexual intercourse, the employment of the plug, the growth of malignant or non-malignant tumours from the cervix, or the implantation of the placenta over the os-placenta prævia; or to the use of certain drugs which act specially on the uterine organs, such as ergot of rye, savin, certain preparations of iron, rue, iodide of potassium. cinnamon, &c.

It is very remarkable to what an amount of injury from mechanical causes the body may be subjected without disturbing the functions of the uterus. Thus Mauriceau relates, in astonishment, the history of a woman, advanced to the seventh month of pregnancy, who fell from a window on the third floor, broke her arm, suffered much from a dislocation, and was severely bruised; and yet gestation continued to the full period. at the completion of which she was delivered of a healthy child. In the present day, almost every hospital surgeon has seen the most frightful injuries recovered from during pregnancy, without causing premature expulsion. Women have suffered from fracture of the skull. extensive abdominal wounds, falls from horses, &c. ; they have nearly killed themselves, unintentionally or otherwise, with violent poisons, or with powerful drugs supposed to act specifically upon the uterus; they have undergone all the horrors of shipwreck, with immersion in the water for very many hours; and yet a few weeks afterwardshave been delivered of healthy mature children, without more suffering than usual.

Under this head must also be included those cases in which abortion or premature labour is voluntarily excited; either for criminal purposes by some knave, or for some good end by the physician. The appliances adopted by the former for committing intra-uterine murder very frequently cause the death of the pregnant woman: those employed by the latter at the call of duty are not uncommonly the means of saving two lives. It is, however, unnecessary to mention here the different methods employed for causing the premature expulsion of the fœtus; since the object of this chapter is to show how abortion may be prevented, not how it is to be provoked.

2. Causes due to a Deranged State of the Mother's Health. It is generally believed that women of a nervous and irritable temperament, who may be prone to great excitement from slight impressions, are more liable to abort than such of their sex as are blessed with more equable temperaments. So, again, plethoric females, who have the catamenial flow unusually abundant, are likely to miscarry frequently. Women who reside in bleak mountainous countries are said to have their health so affected that they frequently suffer from repeated miscarriages; those inhabiting the summit of the Vosges in the north-east of France being so subject to abortion, that—according to Saucerotte—they are in the constant habit of descending into the adjacent plains to avoid this accident.

Acute thoracic and abdominal diseases occurring during the progress of utero-gestation, have a tendency to interrupt it. So likewise epileptic and especially uræmic convulsions have a similar influence. Pregnant women attacked with small-pox, measles, scarlatina, ervsipelas, and typhus or typhoid fever, &c., very frequently abort during the progress of the disorder; either from the direct effect upon the maternal system, or from the fætus becoming affected with the disease. In chronic pulmonary, cardiac, renal, and liver affections, pregnancy often progresses uninterruptedly until an advanced period. It is especially interesting to notice the fact pointed out by Dr. Montgomery that when a pregnant woman labours under an organic disease, which is to end fatally before the natural completion of her gestation, it almost invariably happens that labour is delayed until the child has acquired such a degree of development as to be capable of living when born; labour being established, and delivery safely accomplished, a day or two before the mother's death. It is probable that certain skin diseases are sometimes the provokers of uterine contractions. A remarkable instance in which abortion was induced in eight successive pregnancies by the irritation of excessive itching of the skin has been reported by M. Maslieurat.* The details abbreviated are these :- A lady, thirty-two years of age, became pregnant for the first time when twentyone years old. She suffered but little from the disorders incidental to her condition, until the sixth month: when, without any apparent cause, she was seized with intense pruritus of the whole surface of the body. The legs, thighs, and genital organs were first attacked ; but towards the eighth month the itching extended even to the palms of the hands and the soles of the feet. The rubbing and scratching which she was compelled to have recourse to caused premature labour; immediately after which the cutaneous irritation ceased.

^{*} Gazette Médicale de Paris, 15 Mars, 1848.

The patient again became pregnant; and, as before, ailed nothing till the sixth month, when the itching again returned, and continued until she miscarried at seven months. The same series of events recurred for six times; making in all eight premature labours due to excessive pruritus.

During the early months of pregnancy women are apt to suffer from obstinate constipation, accompanied with tenderness and flatulent distension of the abdomen. Very frequently, during the fourth month, the pressure of the enlarged uterus upon the pelvic viscera gives rise to a mechanical impediment to the evacuation of the bowels; and hence a daily increasing accumulation of fæces takes place in the descending portion of the The more liquid parts of the collection thus formed pass away; a dry indurated mass, often of great size, being left. In many cases a channel gets formed through the centre of this mass; and as fluid fæcal matter mixed with mucus passes down this, and is evacuated in small quantities, at short intervals, the patient fancies and alleges that she suffers from diarrhæa. A proper investigation of the history and symptoms, together with a manual examination, will, however, enable the practitioner to dispel the delusion; for if a hard, lobulated, slightly movable tumour, tender on pressure, cannot be felt about the left inguinal region, still an exploration per rectum will detect the hardened fæces blocking up the passage. The congestion of the pelvic viscera produced by the painful tenesmus and straining, the nervous excitement, the vitiation of the secretions generally, and the impediment to the free circulation of the blood in the uterine organs, which result from the accumulation, may very often produce A poor woman attended by me under circumstances similar to those just detailed, aborted at the

end of the fourth calendar month; and very nearly lost her life from the great difficulty which was experienced in controlling the profuse hæmorrhage which ensued. The hardened fæces, which were subsequently removed by enemata and a scoop from the rectum, were at least sufficient in quantity to fill a quart measure.

Of all the causes of abortion arising from an abnormal condition of the mother's health, I am inclined to think that constitutional syphilis is one of the most common. There is every reason to believe that the blood of persons which has once been contaminated by the poison of syphilis may be in a depraved condition, even though there are no external signs manifested by the individual. The precise nature of the abnormal taint has not as yet been determined by any of the microscopical or chemical examinations which have been made: and hence we can only judge of it from the effects produced at some later period either on the victim herself, or on her offspring. Females who once suffer from abortion are very liable to abort again, and at about the same period of utero-gestation. These subsequent abortions are then said to be due to the habit which has been acquired of aborting. Without at all denying that this may sometimes be the correct explanation, yet I am convinced that it is not often so. Most of the cases of abortion from habit which have come under my notice have really been instances of abortion from constitutional syphilis; and they have only clearly proved that so long as the cause remains, the same effects will be reproduced again and again.

There are three principal modes in which a woman can become infected with the venereal poison. The most obvious of these is by contracting a primary sore. The ulcer may have its seat on either of the labia majora, or on the nymphæ; or it may attack any part of

the vaginal walls; or it may be situated on the cervix uteri, although this part is very rarely affected. primary syphilitic sore contracted during pregnancy is not necessarily fatal to the fœtus in utero; but if a mercurial course of treatment be neglected the child is almost certain to perish and to be prematurely expelled. Some authors have thought that the administration of mercury to a pregnant woman is calculated to produce abortion; but I know of no observations which will bear a critical analysis in support of their views. It cannot be too strongly impressed on the practitioner that it is the syphilitic poison which causes the abortion, and not the mercury. Out of thirty-seven women by whom I have been consulted, who had contracted primary sores at some more or less remote period, and who had been treated in different ways by other physicians, twenty-three subsequently either aborted once or oftener, or were prematurely delivered of dead children. Of the remaining fourteen, one was delivered three times in succession, at the full period, of dead children: seven gave birth to live children who were afterwards affected with constitutional syphilis: five were delivered of healthy children, who were apparently of sound constitution when six months old: and one was delivered of a dead child, by means of the forceps, after a tedious labour.

Another way in which it is highly probable that a woman may receive the venereal taint is by direct secondary inoculation: the individual contaminating her having been apparently cured of the primary disease, or perhaps even having been himself only infected by a person with secondary symptoms. Although this method of contagion is denied by many authors, yet I have had some few cases under my care which could only be explained by admitting the truth of this hypo-

thesis: unless indeed the patients practised very great and unnecessary deceit. Dr. Whitehead may be cited as a believer in this theory; and from his writings the following graphic illustration is quoted:*—

"A young wife, in her twenty-fifth year, having been married upwards of four years, came under my notice in September, 1850, complaining of deranged general health. She had had five pregnancies, of which the first ended at seven and a half months, the second at three months, the third at seven and a half, the fourth at eight and a half, the fifth at eight and a quarter months, all still-born and in a state of decay. She was a member of a robust, unailing family, and had never been out of health, to her knowledge, before marriage; but since, had constantly had yellow leucorrhoea, painful menstruation, with all the sympathetic disturbances usually attendant thereon. The whole body of the uterus, and especially its lower section, was enlarged and painful under pressure; the circle around the orifice was a suppurating surface extending apparently within the cervix; and external to this, which was bounded by a defined margin, the cervix was irregularly patched with aphthæ. These appearances led me to suspect that the patient laboured under constitutional syphilis, and in delivering the necessary instructions in reference to treatment, I expressed a wish to see her husband. This request led her to guess at my object, and to infer also what my suspicions were respecting the nature of her case, as she began voluntarily to assure me that her husband possessed a strong and healthy constitution, that he belonged to a remarkably healthy family, and that, moreover, he was a man of the strictest moral integrity, and could not be suspected of infidelity. The husband, however, paid me a visit shortly afterwards. He had never suffered from either venereal disease or gonorrhœa in the primary form. He frankly confessed, however, that he had incurred the risk of infection some months before marriage. A few weeks after the occurrence alluded to by him, he had an ulcer on the lower lip, near the right angle of the mouth : it was broad and deep, and the surrounding parts were extensively inflamed, hard, and painful. The sore proved refractory, and on being shown to a late eminent painful. The sore proved refractory, and on being shown to a late eminent surgeon, Mr. R. Thorpe, it was pronounced venereal, and was prescribed for accordingly. When presented to my inspection, the peculiar aspect of the cicatrix, with its adjoining brown, wavy margin, together with a suspicious-looking scaly tubercle on the outside of the left commissure, with the assurance also that he had been frequently troubled with spots of that kind during several years past, induced me, unknowing at the time all the preceding details, to say that it looked extremely like the remains of an old venereal sore. The patient's medical attendant, dissatisfied with my opinion, took him to one deservedly celebrated for his knowledge in these complaints, who likewise pronounced it the remains of a venereal sore. In this case the disease, undoubtedly imbibed by secondary inoculation, and in the same form continued, had existed at least five years : its virulence was no way weakened by time, as the constitution of the wife was

^{*} On the Transmission from Parent to Offspring, of some forms of Disease, and of Morbid Taints and Tendencies. Second Edition, p. 243. London, 1857.

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greatly enfeebled, and the evil in her seemed to be increasing daily. Both patients were several months under my care; they appear to have re-covered perfectly under the anti-venereal treatment adopted."—The wife has since borne four living children.

The third means by which the maternal system gets infected consists in the propagation of the poison from the fœtus to the parent. Thus a father begets syphilitic children, who while in utero contaminate the mother. It has been clearly shown by Mr. M'Gillivray, of Huntly,* and has been proved to demonstration by Mr. Savory, that while as all allow, a portion of the mother's blood is continually passing by absorption (and assimilation) into the body of the fœtus, in order to effect its nutrition and development; so also a portion of the blood of the fœtus is as constantly passing, in like manner, into the body of the mother. Thus as the fætal blood commingles with the general mass of the maternal blood, it inoculates the mother's system with the constitutional qualities and peculiarities of the embryo; and as these qualities are in part derived by the foetus from its male progenitor, the peculiarities of the latter are thereby so engrafted on the system of the female, as to be communicated by her to any offspring she may subsequently have even by other males. Of course with each successive fœcundation by the impure father, the mother's health deteriorates; for on each occasion she receives, as it were, a fresh charge of the poison from the ovum, which is added to that already accumulated in her system. I have recorded elsewhere

^{*} See a series of papers On the Focus in Utero, as Inoculating the Maternal with the Peculiarities of the Paternal Organism; and on Mental States in either Parent, as Influencing the Nutrition and Development of the Offspring. By Alexander Harvey, M.D., Physician to the Aberdeen Royal Infirmary.—Monthly Journal of Medical Science. Edinburgh, October, 1849, October, 1850, and November, 1850.

† An Experimental Inquiry into the Effect upon the Mother of Poisoning the Factus. Pamphlet. No date.

a rather striking case of this means of contamination.*
The chief points in the history are briefly as follow:—

In 1851 a healthy lady was delivered of her first child: the infant was strong and hearty, has never since had any particular illness, and is now alive and well. During the puerperal period, the husband contracted a sore from a prostitute, for which he was profusely salivated. The ulcer quickly healed: but two months afterwards secondary symptoms appeared, and mercury was again freely taken. Being nervous as to the consequences, he did not have connexion with his wife for nearly seven months from the date of his last cure; at the time of intercourse being perfectly free from the slightest indication of any taint. The wife then became pregnant, and was prematurely delivered of a dead child. Again and again this happened, until she had been delivered of five premature still-born infants. With each pregnancy her health deteriorated in a marked degree, and at length she applied to me on account of her wretched condition. Under the influence of mercury she very much improved, and becoming pregnant, was delivered at about the end of eight calendar months of a healthy-looking child. At the end of a fortnight this baby was attacked with all the symptoms of constitutional syphilis, and though apparently cured by mercurial inunction, yet it died suddenly in the mother's arms some weeks afterwards.

When the venereal taint in the father is slight, the mother may not become affected for some time. In January, 1859, I was consulted by a lady about her own and infant's health. The history she gave me was this:—

She was thirty-seven years of age, and had been married three and a half years. Her health had been uniformly good until two months ago, and her husband was strong and hearty. She was delivered of her fixed third in July, 1857: it was small and thin at birth, and died of wasting and an eruption about the buttocks, three months afterwards. The second child was born in March, 1858; though premature, it was then healthy, but it soon became much emaciated, and died in the following July. The third child was born on the 23rd December. 1858: it remained healthy for fourteen days, when it began to suck with difficulty, and a scaly eruption appeared around the anus. When brought to me on the 21st January, 1859, it had all the symptoms of constitutional syphilis, but was soon cured by mercurial inunction. The infant was weaned at the same time, and was reared on cow's milk alone, which has agreed remarkably well with it, so that he is now—December, 1859—a fine, well-grown child. The mother was pale and thin; she complained chiefly of languor, loss of appetite, great restlessness at night, and of an abundant yellow leucorrhoral discharge. The cervix uteri was found hypertrophied and tender, and the labia were indurated and marked with patches of aphthous exco-

^{*} The Transactions of the Obstetrical Society of London, Vol. I., p. 132. 1860.

riation. The treatment was not commenced for some weeks, owing to objections on the part of the husband; but ultimately it consisted in the prolonged administration of the solution of bichloride of mercury, and the occasional application of the nitrate of silver to the excoriated surface of the lips of the uterus. Although she was thus cured, still it is to be feared that the relief will not be permanent, inasmuch as the husband believes himself to be in sound health, and therefore refuses to undergo any treatment.*

3. A Morbid Condition of the Uterus or its Appendages the cause of abortion. The ovum and the uterns being developed simultaneously by forces peculiar to each, any inequality in the growth of the two must be mischievous to the former. The existence of old inflammatory adhesions between the uterus or its appendages and the other pelvic viscera may lead to abortion by preventing the development of the pregnant uterus beyond a limited point. In such cases the miscarriage often takes place about the third or fourth month: the expulsion being preceded by hæmorrhage, and sometimes followed by acute metritis or pelvic cellulitis. Perhaps also an excessive rigidity, or an unusual sensibility of the uterine fibres, may prevent gestation progressing to the full term; these causes being most likely to have this untoward effect in primiparæ. Congestions and inflammatory diseases of the uterus or ovaries may also cause the death of the fœtal germ soon after conception; and so may inflammation and ulceration of the mucous membrane covering the cervix uteri, or of that lining the cervical canal. Ulcerative lesions of the uterine neck, whether simple or specific, are sometimes a cause of sterility; but when they do not prevent con-

^{*} Since writing the above, I have delivered this lady of her fourth child. The labour took place on the 21st April, 1860; and already—May 1—the infant is exhibiting proofs that her blood is contaminated. The poor little creature has "the snuffles;" there is an erythematous eruption around the anus and on the buttocks, and the skin is harsh and dry, and she shows a disgust for food by refusing the breast. The same plan of treatment will be adopted as was successful with the third infant, who has become a fine stout boy.

ception the ulcerations are apt to be rendered more severe and irritable by pregnancy. In about one third of the cases of cancer of the uterus the child dies and is prematurely expelled at the sixth or seventh month. When the abortion is due to chronic inflammatory induration and hypertrophy of the cervix, the expulsion of the ovum is generally preceded by very copious and intractable hæmorrhage; owing to the difficulty with which the thickened os uteri dilates to allow the ovum to pass.

Retroversion of the uterus sometimes occasions abortion; owing to the great congestion of the uterine veins, as well as of all the neighbouring viscera, which results from the pressure of the organ on the unyielding walls of the pelvic cavity. This displacement is very likely to happen prior to the time of quickening from the straining exerted to expel hardened fæces, especially if any great accumulation has been allowed to take place. The mass in its descent is violently impelled against the fundus of the uterus, thus forcing this part into the hollow of the sacrum; while the lower part of the body and cervix is tilted up directly under the arch of the pubes. When the accident occurs suddenly, the patient experiences great pain from her immediate inability to void urine owing to the pressure of the womb upon the neck of the bladder; but if the change in position be more gradual the bladder can be partially emptied, and the inconvenience from the retention is much less urgent. Unless the uterus be replaced, however, and the bladder relieved by the catheter, inflammation and sloughing are very likely to ensue, and to end fatally.

Prolapsus of the uterus, by impeding the circulation of the blood through the pelvis, and irritating the rectum and bladder, may give rise to venous congestion of the uterine walls, the effusion of serum, and the consequent separation and expulsion of the ovum. So also fibrous tumours of the uterus, by opposing the due development of this organ, may cause abortion: and large abdominal growths of any kind may have a like effect. And lastly, all chronic diseases of the uterine appendages which can, either directly or indirectly, induce irritability of the muscular fibres of the uterus, or impede their free growth, may prematurely determine the arrest of gestation. Hence ovarian tumours, dropsy of the Fallopian tubes, follicular ulceration of the vagina, gonorrhea, &c., may act as causes of abortion.

4. Diseases of the Fætus and Placenta the cause of abortion. It is now a recognised fact that the fœtus is liable to almost every form of disease which may attack the new-born child; and it is remarkable that many of these morbid states, as well as such as attack the placenta, are apt to recur in the same woman in successive pregnancies. These affections, though not necessarily fatal, are always more disastrous to the fætus in proportion to the early period of gestation at which they occur. Whatever circumstance causes the death of the ovum, will inevitably produce abortion; although the latter very seldom takes place immediately upon the supervention of the former. When disease ends fatally at an early period of fœtal life, it may either do so without leaving any anatomical changes by which its nature can be recognised, or the process of putrefaction may have masked the morbid appearance; and even at a later period the immediate effect may have been such upon the whole organism, that there has not been sufficient time for any appreciable circumscribed lesion to take place. During the early months of fœtal life the liver and intestines suffer most frequently from disease: at a later period, hydrocephalus, hydrothorax, pulmonary lesions, peritonitis, ascites, syphilitic eruptions, and strumous deposits are the prevalent affections: whilst during the last two months of gestation there is scarcely a disorder with which the intra-uterine infant may not be afflicted.

Hereditary diseases may be transmitted by the father or by the mother. With regard to the father, it was formerly doubted if his disorders were communicable to the offspring; but repeated observations have decided this question in the affirmative. A vitiated spermatic fluid, such as that derived from a man whose health has been broken down by a long course of dissipation; or a secretion corrupted by a syphilitic, or strumous, or tuberculous taint, undoubtedly communicates a morbid principle to the new being, which is almost sure, sooner or later, to destroy it. Many physicians have also thought that intoxication, great fatigue, or mental depression at the time of coition, have a very injurious effect on the physical development of the embryo.—The maternal diseases which may affect the child in utero are very numerous. The most remarkable of these are typhus and typhoid fever; the exanthemata; phthisis and scrofula; syphilis, &c. When the mother suffers from cholera, the fœtus seldom escapes; but whether the latter dies from the direct influence of the epidemic, or from the pressure exerted on the uterus by the cramps and contractions of the abdominal muscles, or from the nutritious materials afforded by the mother becoming dried up in consequence of the excessive evacuations, is uncertain. The mother and fœtus sometimes suffer contemporaneously from variola; or the former may experience an attack of modified, while the latter has natural small-pox. The fœtus may also recover from the disease, and be born with the pits alone remaining. In other cases, the body of the mother

seems but to serve as the conductor of the morbid agent, she herself being unaffected by it. Thus women who have been years before affected with small-pox, or been well vaccinated, have-shortly after exposure to contagion -given birth to infants marked with variolous pustules; the maternal system having remained quite healthy. Dr. Jenner has recorded many cases of this kind. So, again, a few writers have asserted that during the prevalence of cholera, infants in utero have perished from its influence, without the mothers being attacked at all; and though the proofs brought forward to support this opinion are not very convincing, yet the observation is not to be rashly rejected. Numerous examples of congenital measles and scarlet fever are recorded; and two or three writers have described instances in which the poison of malaria has reached the fœtus and given rise to intra-uterine ague. In one striking case, the fœtal rigors were perceptible both to the mother and others during the fit; but it was remarkable that the periodic attacks of shivering did not occur at the same time as those of the mother, who also laboured under the disease.

One of the most fatal of fœtal diseases, without any doubt, is syphilis. The observations already made upon this head render further comment almost needless. Still it may be said that the following are the chief morbid appearances found after birth in these cases:—A coppercoloured cutaueous eruption: abscesses in the lungs, or indurations of portions of the pulmonary tissue: diffused or circumscribed suppuration of the thymus gland: the infiltration of an albuminous fluid into the parenchyma of the liver, disconnecting and deranging its proper secreting structure: and lastly, the presence of numerous pemphigoid vesicles, having a blue or violet tinge, and being seated on the palmar or plantar regions, is stated

to be a veritable indication of syphilis, though one of its most rare phenomena.

The various serous membranes of the fœtus would appear to be particularly susceptible to attacks of acute inflammation; which attacks very frequently terminate fatally. Pleurisy, pericarditis, and acute or chronic inflammation of the arachnoid leading to hydrocephalus. are not uncommon diseases of intra-uterine life. But the peritoneum seems most frequently to be the membrane affected; and in still-born infants, expelled prematurely, we can often detect evidences of its severity in the patches of coagulable lymph, the adhesions between the convolutions of the intestines, the effusion of serum or pus, or the marks of ulceration, to either or all of which it may have given rise. Very rarely morbid appearances are found indicating that pleurisy and peritonitis have both been present; or the latter may have existed with pericarditis, or with hepatitis, or with pneumonia, or with ascites. The inflammatory action may have been confined to one or more spots of the peritoneum, or the whole surface of this membrane may have been invaded; and it is remarkable that in most of these cases the mesenteric glands are found hypertrophied, though free from any morbid degeneration. It is difficult to say what are the causes of inflammation in the fœtus. Sometimes, no doubt, it is due to some morbid state of the mother's health; but frequently it originates in and is confined to the organs or tissues of the fœtus itself, being quite independent of any peculiar condition of the maternal system. Several instances are known where an imperforate urethra has given rise to such excessive distension of the fœtal bladder, that the latter has ruptured; the urine being extravasated into the abdominal cavity, and setting up intense in-

flammatory action in the peritoneum. So also the inflammation seems sometimes to have been due to an internal strangulation of the intestines: Dr. Simpson relates two instances where coagula of blood in the abdominal cavity from a partial laceration of the substance of the liver seemed to have excited it: and occasionally it is connected with some malformation of the abdominal viscera or parietes. Our knowledge of the symptomatology of all intra-uterine diseases is most imperfect; but with regard to peritonitis in particular I know of no signs by which its existence can be diagnosed. One combination of symptoms seems to attend most severe fœtal diseases; viz., a great increase in the strength and frequency of the child's movements, appreciable to the mother, attended sometimes with spurious pains, and generally followed by a sudden and permanent cessation of the motions. Beyond this we know nothing. Peritonitis seems most frequently to affect the fœtus during the two latter months of gestation; and it is commonly fatal, though children have been born alive while suffering from it.

In twin pregnancies when one fœtus is acephalous, the progress of gestation is often interrupted. Of forty-seven cases referred to by Tiedemann, the labour was premature in thirty-three. Of eleven examples mentioned by Dr. Hohl, of the University of Halle, in three parturition took place at the full period, in one at the sixth month, in four at the seventh, in one at the eighth, in one at the ninth, while in one it is only said that the woman did not go to the full term. The most perfect child is born first, the foot being often the presenting part; and the acephalous monster generally follows in from half an hour to ten or twelve hours.

Organic alterations of the membranes, especially vesicular or hydatidiform disease of the chorion, and inflammatory affections of the amnion, may destroy the fœtus; the effusion of blood into the parenchymatous substance of the decidua may have the same effect; knotting of the funis, or compression of it from torsion, by impeding the circulation, may produce a like result; and so also may diseases of the placenta. The latter organ, which Lobstein called a physiological lung, and which Harvey termed the nutrient organ of the embryo, as the mammary gland is of the infant, performs the most important offices in the vital function of sanguification. Literally a mass of bloodvessels, there is-as Dr. Robert Barnes remarks-no other organ in which such active and diversified processes of hæmatosis are carried on; not even perhaps excepting the spleen, lungs, and liver. All the blood of the fœtus is successively brought by the umbilical arteries to the placenta; where it exchanges, with the maternal blood, its waste materials for . fresh alimentary matter. These changes are wrought through the apposed walls of the utero-placental arteries and veins or maternal portion of the organ, and the branches of the umbilical arteries and vein or fætal portion. By such changes the placenta is made the final emunctory channel, and the prime restorative source: and hence its physiological and pathological conditions must exercise the most important effects upon the economy both of the mother and fœtus.

The morbid conditions to which the placenta is liable during its stages of formation, growth, and maturity, are numerous and important. Thus it may become hypertrophied, or atrophied, or softened, or indurated, or partially calcified, or ossified; it may take on inflammatory action, placentitis; it may be the seat of partial congestions and extravasations of blood, placental apoplexy; or crude tubercles may be deposited on its surface. All of these conditions have to a greater or lesser degree

the like effect of interrupting or vitiating its functions; for unless the structure of the placenta is uniformly soft and spongy, and its adhesion to the uterus perfect, hæmorrhage will result, the partial disruption will extend, uterine contractions will be excited by the effusion of blood, and the ovum will be expelled. Dr. Robert Barnes has elucidated by means of the microscope, and has ably described in the Medico-Chirurgical Transactions,* an abnormal condition of the placenta-fatty degeneration-which is not unfrequently connected with the death of the fœtus, both in the earlier and later months of gestation. The fatty matter is found chiefly in the cells of the fœtal villi, and in the coats of their bloodvessels. In some instances the morbid change seems to invade the entire decidual surface of the placenta with great uniformity; while in others, only portions are affected, some parts being far gone towards disorganization, whilst in others the villi remain comparatively healthy. The cases observed by Dr. Barnes furnish illustrations of the influence of fatty degeneration in causing abortion and hæmorrhage: the first being produced by the disease rendering the villi unfitted for their office of maintaining the nutrition of the embryo; the second, by the affected portions of the placenta ceasing to be spongy and yielding, by the vascular channels between the placenta and uterus becoming more or less obliterated, and by there resulting in consequence a disposition to detachment at the diseased points. If the detachment were strictly limited to these points, where little or no vascular connexion

^{*} Vol. XXXIV., p. 182, and Vol. XXXVI., p. 143. London, 1851 and 1853. See also some valuable articles on Diseases of the Placenta, by Dr. Barnes, in the British and Foreign Medico-Chirurgical Review, Vol. XIV., p. 21, Vol. XV., p. 156, and Vol. XVII., p. 138. London, 1854, '55, and '56.

with the uterus remains, there would be no hæmorrhage; but this can seldom be the case, for the detachment of the diseased lobes is almost sure to entail partial separation of portions still maintaining a freer vascular connexion, and thus hæmorrhage must result. The loss of blood also may be the immediate occasion of the expulsion of the ovum: or the death of the latter may give rise to irritation similar to that produced by any other foreign body, and so excite contractions of the uterus.

When, from any natural cause the fœtus perishes, an interval varying from five or six to twenty or more days usually elapses before it is expelled. During this time, slight symptoms of impending abortion are generally present; and in order that our treatment of these may not be altogether empirical, it is very important that we should know whether the fœtus be alive or dead. To the medical jurist such knowledge is not unfrequently quite indispensable; as when a pregnant woman has been maltreated, and her offspring is thought to have died from the injury. Moreover, in many cases of difficult labour it is very desirable that we should be able to decide this question. To take only one example; when the choice has to be made between the performance of craniotomy, the application of the forceps, or the operation of turning, it may be supposed that every practitioner would resort to the first proceeding, as being the least dangerous to the mother, were he sure that the child was dead. Hence the following observations on the Signs of Death of the Fætus will hardly be deemed out of place.

The signs generally enumerated as indicating death before labour are these:—a cessation of the fœtal movements; a diminution in the size of the abdomen, and a loss of its firm rounded appearance; an absence of that tense elasticity of the uterus, so peculiar to healthy

pregnancy; a sensation of coldness and dead weight in the abdomen; the impression of a heavy mass rolling about the uterus, or the falling of the uterine tumour from side to side in the abdomen, as the patient changes her position; the breasts losing their firmness and becoming flabby; and occasionally the occurrence of a slimy, whitish-yellow, or slightly sanguinolent discharge from the vagina. The escape of a fœtid discharge is very frequently said to be a common sign of the child's death: but the absence of it is no proof that there is life, for a dead fœtus may remain in the mother's womb for many weeks without the putrefactive process setting in, provided the membranes remain entire. In cases of twins. where one dies at an early period of gestation, it is often retained and expelled undecayed when its fellow is born at maturity. None of the foregoing symptoms alone can do more than give rise to slight suspicion; but taken collectively they are valuable, especially if corroborated by the existence of languor and debility, irritability, mental depression, loss of appetite, disordered bowels, and sunken eves with the formation of a deep leaden colour beneath them. At the same time it must be remembered that women have been known to carry a dead child for weeks, without presenting any one of the foregoing symptoms; and their general health has been much improved, owing to the cessation of some of the sympathetic disorders of pregnancy. As the sounds of the fœtal heart are the surest sign of pregnancy, so the inability of an experienced auscultator to detect them. after a thorough or repeated examination, is the most valuable proof of the child's death; a proof which may be regarded as almost conclusive during the last few weeks of pregnancy, when I believe that careful auscultation can otherwise scarcely fail to detect the comparatively strong pulsations.

The symptoms during labour which may be regarded as diagnostic of the child's death are various; but none have the same importance as the inability to detect the pulsations of the heart. In head presentations the scalp is found loose and flabby, the great fontanelle is flaccid, the bones of the skull overlap each other more than during life, and when the fœtus has been dead some time and is putrid, the cranial bones are felt to be movable within the scalp, like loose shells in a bag. In face presentations the lips are flabby, the jaws do not close if the finger be insinuated within the mouth, and the tongue is flaccid and motionless. In breech presentations, the sphincter ani is relaxed, it does not contract on the finger passed within it, and sometimes there is an escape of meconium. With an arm presentation, the limb is perhaps found flabby and moist, instead of swollen and livid, as when the child is alive. and the cuticle may be abraded or extensively separated. And lastly, in prolapse of the funis, there is a complete absence of all pulsation in the vessels, if the infant be dead; this fact being ascertained not by a momentary examination, but by a careful exploration, so as to be sure that the pulsations are not merely suspended, but that they have absolutely and entirely ceased.

3. The Symptoms of Abortion.—The symptoms vary somewhat according to the cause of the abortion, and the period of pregnancy at which it occurs. In the early days of gestation the phenomena are scarcely more noticeable than those which happen in many cases of dysmenorrhæa. A few bearing-down pains are experienced, some amount of physical and mental depression, an aching in the loins and about the sacrum, and the ovum is expelled whole or in shreds. Not unfrequently the mass is mistaken for a clot of blood,

and is thrown away; the patient merely imagining that her monthly flow has been more abundant and attended with greater pain than usual.

The case is different at a more advanced stage of gestation, when the pregnancy is interrupted by some cause operating slowly, such as chronic fætal or maternal disease. The mother first suffers from lassitude and depression of spirits, loss of appetite, thirst, nausea, palpitations, cold extremities, attacks of faintness, a sense of weight and chilliness in the lower part of the abdomen, irritability of the bladder, weakness and flaccidity of the breasts, and an aching sensation in the back and loins. Two prominent symptoms may then be noticed-viz., hæmorrhage and uterine pain; either of which may perhaps exist alone without disturbing the process of gestation, though when both occur together the ovum is almost sure to be expelled. If a vaginal examination be instituted while a pain is on, in a case where pregnancy has advanced up to or beyond the fourth month, the uterus will be felt to contract or harden sensibly; the rigidity diminishing as the pain ceases. Perhaps, too, the os will be found open, and the membranes beginning to protrude; and then the practitioner may be certain that only a short time will elapse before the escape of the waters and the expulsion of the fœtus and placenta. In some cases the hæmorrhage proceeds to a serious extent for two or three days before the ovum comes away; or if the fœtus should pass and the placenta be retained, a constant and exhausting bleeding will be kept up until the latter is discharged spontaneously or removed by art.-It cannot be too strongly impressed upon the practitioner that in most instances of threatened abortion a vaginal examination should be gently made, with the finger well lubricated, in order to form a positive diagnosis. Such

an examination, properly conducted, cannot—as some have said—produce that expulsion which it is the object of our art to prevent. Should the os and cervix uteri be detected sufficiently patulous to admit the finger, or should the cervix be found so obliterated that on passing the finger over the lower segment of the uterus no neck can be distinguished, or should the ovum be felt projecting down the cervix or partly protruding through the os, it will be useless attempting to stop the expulsive process; for in instances of this kind it is certain that the ovum is at least partially detached from its connexion with the uterus, and the patient will not be safe until the whole product of conception has come away.

When the abortion is the result of some accident—e.g. a fall, blow, or sudden fright—the violence is generally at once followed by a sharp pain in the abdomen and by hæmorrhage; and in some cases the ovum comes away almost with the first gush of blood. Of course the earlier the pregnancy the more likely is the lastmentioned result to happen; for it may be again stated that at an advanced period of gestation a certain interval almost always elapses between the accident and the abortion, during which the patient—having recovered from the immediate shock—is often apparently nearly well.

In cases of premature labour, the process of parturation is seldom as regular and rapid as in labour at the full term. This circumstance will be easily understood by remembering the length and hardness of the cervix at this period, the slowness with which the os then dilates, and the comparatively feeble contractile powers of the uterus. The longer the interval which elapses between the death of the child and the labour, the less also will be the risk of serious flooding; for since the child's death lessens the activity of the uterine circula-

tion, and perhaps partially obliterates a greater or lesser number of the utero-placental vessels, so the latter bleed but little on the separation after birth. When the membranes get ruptured at about the same time that the child dies, and labour does not supervene for many days, then the action of the external air on the child's body produces rapid putrefaction. The maternal system in consequence becomes much deranged, high fever sets in, and unless the delivery be hastened by art, purulent absorption may take place and prove fatal.

The fact has been already noticed that the death of one feetus in a multiple pregnancy by no means usually leads to its immediate expulsion. But the contrary sometimes, though rarely happens; and abortion of one feetus takes place, whilst the other continues to grow in the uterus. Dr. Whitehead relates the following interesting example of this occurrence:—*

A woman of strong mind, thirty-two years of age, and in the seventh month of her sixth pregnancy, was in a grocer's shop ordering some goods, when a heavy weight fell upon the instep of her left foot. She was removed home, in great pain; and whilst sitting with the injured limb in a foot-bath, she felt a sudden and violent struggle within her, followed immediately by a plentiful escape of the liquor annii. The medical man who was sent for, finding the pains of labour strong and frequent, and a foot already low down in the vagina, proceeded to deliver; and a puny female child was born, alive, and apparently healthy. Its left foot, which had been the first to present, was found to be firmly contracted towards the inner aspect of the limb, the heel being raised, and the solosi muscles rigid and unyielding; but by the proper use of extension with bandaging, its use and symmetry were eventually restored. After some ineffectual efforts to bring away the placenta, the abdomen was examined, when it was found that there was another child, the birth of which was hourly and daily expected. In the course of ten days—no indications of labour coming on—the patient was sufficiently recovered to attend to her household duties, which she continued to do until the completion of the natural term of pregnancy, when she was safely delivered of a full-grown male child, in vigorous health. This event happened precisely sixty-five days after the first birth: and then only did milk appear in the mother's breasts, so that she was enabled to nurse both the children.

^{*} On the Transmission from Parent to Offspring of some forms of Disease, &c. Second Edition, p. 21. London, 1857.

M. Desormeaux has also given an account of a very remarkable case in which there must have been a triple pregnancy :--*

"Une dame enceinte pour la première fois à l'âge de quarante ans, fit une fausse-couche à deux mois et demi ; bientôt après, les symptômes de la grossesse reparurent ; des mouvemens d'enfant se firent sentir à l'époque ordinaire ; a sept mois, elle éprouva une frayeur vive, suivie de phénomènes qui annonçaient la mort de l'enfant ; cependant il existait toujours mouve-mens dans l'utérus. Enfin, après deux mois, cette dame accoucha d'un enfant mort, et d'un autre qui était vivant et bien portant. Rousset, dans son Traité de l'Hystérotomotokie, a rapporté un exemple analogue."

After a miscarriage or premature labour has taken place, the physician must satisfy himself that the whole product of conception has come away. This, it need scarcely be said, he does by making a vaginal examination, and by carefully scrutinizing the aborted mass. So long as any part of the fœtus or its membranes remains in the uterus, the mother is exposed to two great sources of danger. The first and most pressing is the risk to life from flooding, which nothing will check effectively but the ejection of the retained foreign body: the second source of mischief is the putrefaction of the portion left behind, and in consequence purulent absorption, uterine phlebitis, &c.

The fact must not be forgotten that inversion of the uterus may happen after abortion. The occurrence of this accident has generally been considered only possible after parturition at an advanced period of gestation; and in most instances it has been thought to be due to the employment of injudicious force in removing the placenta. These views are, however, somewhat incorrect, for it has happened after miscarriage at the third and fourth month, and in other cases after natural labours where there has been no manual in-

^{*} Dictionnaire de Médecine. Article, Avortement. Deuxième Edition. Tome IV., p. 466. Paris, 1833.

terference of any kind. Two cases—there are probably others with which I am unacquainted—have been published in which inversion of the uterus occurred after abortion—viz., one by Lisfranc* and the other by Dr. Skae.† In the first, the accident happened at about the third month of pregnancy; and though the woman suffered afterwards from an abundant leucorrhœal discharge, pains in the pelvis and loins, and sympathetic disturbance of the stomach, yet five years elapsed before the cause of her maladies was discovered. The chief points in the second instance are as follows:—

On the evening of Saturday, 25th January, 1845, Dr. Skae was requested to visit a poor woman, who was said to be very ill in consequence of having had a miscarriage. The patient was thirty-six years of age; had been married sixteen years; had been pregnant eight times, and gone the full period in six; and her labours had never been unduly severe. She was found in a state of great distress and exhaustion; and complaining of severe headache, with intense pain in the back and both iliac regions. She also stated that she experienced constant bearing-down pain attended with flooding, and a sensation of something having fallen down within her. The history was that ten days before, she had been seized with flooding; that on the following day abortion took place, she being four months pregnant; and that two days afterwards she got up to attend to some household matters, but the flooding increased to such an extent as to necessitate her return to bed. She had kept her bed until the 25th January, when at 10 o'clock in the morning she was seized with sickness; while engaged in the act of vomiting, which was severe and continued, she was sensible of something falling down within her; and until Dr. Skae's visit, that sensation continued, along with bearing-down pain, flooding, much general uneasiness, and extreme prostration. On introducing the fingers into the vagina, the passage was found nearly filled with an elongated irregular spherical tumour, of firm consistence, and having shreds of membrane attached to it; while on passing a finger up to the os uteri, the neck of the tumour could be traced entering within it, and having an equally firm attachment, as it were, around the whole circumference of its inner margin. Feeling certain that the mass consisted of the uterus in a state of almost complete inversion, Dr. Skae grasped the organ, and by moderate but steady and continued compression, in the direction of the os uteri, succeeded in about twenty minutes in returning the whole mass. The following day there was a slight projection of the fundus at the os uteri, but it was easily pushed upwards; and she then gradually recovered, being ultimately restored to perfect health.

^{*} Clinique Chirurgicale de l'Hôpital de la Pitié, Tome III., p. 380. Paris, 1843.

⁺ The Northern Journal of Medicine, Vol. III., p. 66. Edinburgh, 1845.

4. THE DIAGNOSIS OF ABORTION.—It is often very important that the hæmorrhage of an early abortion should not be mistaken for the menstrual flow. One way in which any error may be avoided is by remembering that the catamenial discharge, unless very abundant, does not coagulate, owing to the admixture of the blood with the acid vaginal secretions; and even in severe cases of menorrhagia the clots are seldom very large or firm. In cases of abortion, however, the blood rapidly coagulates, and large solid masses of it may come away. The same thing, it is true, happens in the hæmorrhage arising from cancer of the uterus, as well as in that due to the presence of a polypus; but then both these diseases give other indications of their nature which can hardly be overlooked. The effusion of the liquor amnii is also a valuable sign; though it must be remembered that a copious discharge of watery fluid may take place in hydrometra and in hydrorrhœa. Cases have been recorded where pregnancy has proceeded naturally and uninterruptedly after the complete escape of the amniotic fluid: but I doubt very much the possibility of such an occurrence, and believe that the flow in these instances has been due to hydrorrhœa, and not to any rupture of the membranes.

Patients not unfrequently imagine that they have aborted, and that the ovum has come away, when nothing of the kind has happened. The following case affords a good example of this error; and as the patient's history is instructive in other ways, its full

relation may be allowable :-

On the 17th November, 1858, I went to Maidenhead to see a lady, in consultation with Mr. Frank Goolden. The patient was twenty-eight years of age, had been married six years, and was the mother of five children. The catamenia first appeared when twelve years old; they are usually natural in quantity, appear regularly when not pregnant, and are generally followed by leucorrhea. She suffers much from homorrhoids at the monthly periods. She does not seem at any time to have enjoyed

very robust health; having especially been subject to relaxation of the bowels, and to fits of hysteria and fainting. She is very susceptible to the influence of mesmerism, and ten years ago was mesmerised every night for three months, to relieve general restlessness and toothache; but being seized, at the end of this time with a violent attack of hysteria, this course of treatment was discontinued. All her labours-except the fourth-have been remarkably rapid, and usually attended with but little suffering. She has never been able to suckle any of the children. With her first child she went seven months; she was delivered on the 12th March, 1853, soon made a good recovery, and by care reared the infant. At the end of a few months she again became pregnant : about the sixth week of gestation and again at the twelfth there was a severe attack of uterine hæmorrhage, with all the symptoms of abortion, so that she imagined her pregnancy at an end; an opinion, however, which proved to be erroneous, for at the eighth month-on 28th July, 1854-she was delivered of a living child. Several months now elapsed before conception took place for the third time : at the seventh month symptoms as of approaching labour set in, and continued for two days, but the gestation was not interrupted, and she was delivered at the full period, on 25th January, 1856. For some weeks after getting about she suffered from procidentia uteri, in consequence of over-exertion; but this did not prevent her becoming pregnant about the commencement of May, 1856. At the end of three months from the date of conception she had an attack of flooding, which lasted many days, so that she felt almost certain that she had aborted; and every month until the time of delivery the hamorrhage returned, though it was less abundant. At the full period, on 7th February, 1857, she gave birth to a dead child; but though her labour was attended with considerable flooding, she made a good recovery. Nine months now passed away before she conceived for the fifth time; again experiencing symptoms of abortion about the third month, but nevertheless going her full time. Up to the day of her labour-29th August, 1858-she had no difficulty in getting about, and her health was good. The labour was very rapid, so much so that the child was born before she could be placed upon the bed; the after-pains were also very severe, and she passed many large clots of blood. Ten days after delivery she found that she had lost all power in the left leg; and that any attempt to put it to the ground was attended with great pain in the pubic region, which pain also extended down the left thigh. It was owing to the persistence of this loss of power that my opinion was sought .- I found her weak and pale ; with a quick, feeble pulse; pretty good appetite; able to sleep well; and free from pain except when the limb was moved. She was unable to lift the left leg at all, but sensation was not impaired; no reflex actions could be excited by tickling the sole of the foot. There was no swelling or tenderness about the hip or any part of the limb; the uterus was healthy, and of normal size; the left ovary appeared to me to be slightly enlarged, but only slightly; the bowels were regular, and the evacuations healthy; and the urine was normal in quantity and free from albumen or any morbid excess of phosphates or lithates. Upon attempting to stand she complained of "a dragging pain in the lower part of the body, as though everything were coming away from her;" and there was then also much pain in the back. In talking these facts over with Mr. Goolden, we agreed that the paralysis was probably the result of the pressure of the child's head upon the nerves and muscles during its passage through the pelvis; and that in all likelihood the loss of power was kept up by the amemic condition of the patient. She was ordered small doses of steel; good nourishing food; to take pepsine if her digestive powers seemed to require it; and to have a gentle galvanic current passed daily through the limb. She was also to avoid becoming pregnant for some months. In spite of the latter precept being unattended to, this lady gradually recovered; and I have since heard that although she experienced her usual symptoms of impending abortion at about the fourth month, yet she went her full time, had an easy labour, and has since done well.

From one motive or another abortion may be feigned; or a woman may falsely charge another person with having attempted to commit this crime. Dr. Taylor mentions that a young female was admitted into Guy's Hospital, in April, 1846, who charged a policeman with having given her some substance to produce abortion, and with subsequently having effected this mechanically. According to her statement also the man had previously had forcible intercourse with her. She was not examined until nearly two months after the alleged perpetration of the crime; when Dr. Lever found that there were no grounds for believing that she had ever been pregnant.* The length of time which was allowed to elapse between making the charge and the alleged commission of the offence, was presumptive evidence that the crime had not been committed .- I was consulted in 1858 by a woman who seemed desirous to press a similar charge against her husband; with whom she lived very unhappily. Her statement was that the catamenia had been absent for rather more than five months, and that she deemed herself pregnant. Five days before consulting me, she said that her husband compelled her to submit to his passing an iron skewer into the vagina: she experienced great pain, and soon afterwards had a discharge of blood with several "lumps like flesh." On examination, all the organs of generation were found to be healthy: there was no lochial discharge, the mucous membrane

^{*} Medical Jurisprudence. Fourth Edition, p. 489. London, 1852.

of the vagina was of a pale pink colour, the uterus did not seem to be enlarged, and it was proved that the cavity was of the natural size by the uterine sound only passing for two and a half inches. Moreover, the breasts were not full, nor were the nipples turgid. The investigation proved to me conclusively that the woman's statement as to her pregnancy was untrue.

5. THE PROGNOSIS IN ABORTION.—Since the days of Hippocrates the statement has been repeatedly made and credited that the danger of an abortion is greater than that of a natural labour at the full term. observation requires some modification, for, as a general proposition it is not correct. In the first or second month the ovum with its appendages generally escapes without producing any noticeable illness. In the third and fourth months, however, there is often considerable danger from hæmorrhage, owing to the rigidity of the os and cervix uteri, and the slowness with which their tissues dilate. The danger again becomes lessened after the fifth month.-Again, the acute diseases to which lying-in women are liable, are much more severe than any of those disorders which may follow an abortion. It is true that in the latter case some chronic affection of the organs of generation is often left behind which may be troublesome for weeks or even months after the accident; but then there is little or no danger to life to be apprehended from such a disease.—The cause of the abortion must also influence the prognosis. Thus a miscarriage originating through the influence of some slowly operating maternal or fætal disease is attended with much less serious consequences than one produced suddenly by an accident, or by the exhibition of irritating medicines, or by puncturing the membranes. Tardieu reports thirty-four cases of criminal abortion, the death of the mother resulting in consequence in no less than twenty-two.* So, too, an abortion occurring during the progress of an acute inflammation of the brain, lungs, heart, liver, or peritoneum, forms a highly dangerous complication.

The great source of danger in most abortions is the hæmorrhage. Although a woman may lose a very large quantity of blood, and yet as a general rule recover, still every now and then fatal cases occur.—I have also before observed that when a portion, but not the whole, of the ovum and its membranes has been expelled, the patient is very liable to repeated attacks of hæmorrhage, from which she may ultimately sink. Mr. Humphreys, of Shrewsbury, has related a case which is instructive, and proves how even a very small piece of placenta may cause fatal flooding.† The chief facts are these:—

A healthy woman, aged thirty-seven, the mother of five children, aborted at the third month, on 28th August, 1858. The loss of blood was not great at the time, and she did not keep her bed; but at the end of leading and almost pulseless, and the bed saturated with blood, which was "then pouring out of the vagina in a hissing stream." The vagina was plugged with a silk handkerchief, which was removed at the end of six days, when the canal was washed out with cold water; but an hour afterwards the bleeding returned. The vagina was replugged, and the plug allowed to remain three days; there was no bleeding when it was removed, nor until three days afterwards, when it suddenly recurred. Pressure was made over the pubes by pads and a towel; and she was ordered successively compound infusion of roses with an excess of acid, ergot, acetate of lead and opium, gallic acid, muriated tincture of iron, and turpentine. The uterus was examined and found to be flabby; the end of the forefinger only could be passed into the os. Galvanism was applied directly to the uterus on three occasions; vaginal injections of cold water were frequently administered; and subsequently the uterus was injected with a strong infusion of matico, and then with gallic acid, and at length the patient died, two months after the miscarriage. On examining the uterus after death there was found at the upper part a

Série. Tome V., p. 145. Paris, 1856. + British Medical Journal, New Series, No. CI., p. 1006. London, 4th December, 1858.

^{*} Annales d'Hygiène Publique et de Médecine Légale. Deuxième Série Tome V. p. 145. Paris, 1856.

rugged patch of adventitious membrane the size of a shilling; it was of a very dark colour, and on examining it closely, it was found to be made up in great part of vessels with open mouths and sinuses. It was evidently a portion of the placenta, which being more than usually adherent at that part, had not been detached from the uterus at the time of the miscarriage. A probe passed readily down the open mouths of the vessels deep into the structure of the uterus. It was with some difficulty peeled off the lining membrane of the uterus, with which it appeared to be perfectly organized.

Sometimes a portion of the placenta remains in the uterus, partly or wholly separated, without producing flooding. It may then undergo decomposition; and if any of the products of putrefaction become absorbed. very severe constitutional irritation will be developed, with all the symptoms of putrid infection. The earliest indication of this condition is a very fœtid state of the lochia, and an abundant flow; followed in a day or so by a violent attack of shivering. The rigor is succeeded by high fever; the tongue becomes dry, and thickly coated; the pulse is found rapid and weak; the countenance assumes an anxious expression; and there is a throbbing headache, with intermitting attacks of delirium. In some cases peritonitis results; and then the abdomen gets distended and exquisitely tender, there is constant nausea and vomiting, and often diarrhœa. The delirium becomes of a low muttering kind, and does not pass off; the debility and restlessness get extreme; and death usually closes the scene at some time between the fifth and fifteenth day from the first invasion of the symptoms. When the putrid mass gets wholly detached and comes away early, the chances of recovery are greater than when it is expelled only in shreds; but even in cases complicated with peritonitis the result is not necessarily fatal. Yet the patient may succumb even if we succeed in early clearing out the cavity of the uterus; or she may recover only after the formation of secondary abscesses, and after going through a period of protracted suffering.

It occasionally happens that the vascular connexion of the placenta with the uterus remains intact after the expulsion of the embryo, or merely after the death and atrophy of the latter, and that the after-birth continues to be developed. In this way hydatidiform masses and other morbid products called moles are formed; the nature of which will be treated of in the succeeding chapter.-Moreover, after the expulsion of the fœtus, complete absorption of the placenta is said sometimes to take place; and cases have been related by the most trustworthy authors where this extraordinary phenomenon seems to have occurred. Nevertheless this event is so rare, that our practice should not be biassed by the recollection of its being possible: for the chances are innumerably greater in favour of the occurrence of flooding or putrid infection, rather than of this fortunate result.

- 6. The Treatment of Abortion.—This portion of our subject has to be considered under two heads:—
 1. The treatment necessary to prevent abortion; and
 2. That which is to be adopted when this accident seems unavoidable.
- I. The Prophylactic or preventive measures. These consist chiefly in the removal of all causes likely to induce abortion, and in the adoption of such measures as are calculated to keep the maternal system in a state of good health. When the female is of a plethoric and excitable temperament, everything should be done to insure tranquillity of mind and body. Thus the diet should be light and free from stimulants; diluents, such as lemonade and soda-water, are to be freely allowed; the bowels should be kept regular—if necessary by mild laxatives; small doses of digitalis, with nitrate of potash and citrate of ammonia, may often be given with advan-

tage; only gentle exercise in the open air should be permitted; and the patient must sleep in a well-ventilated apartment, on a mattrass rather than on a feather-bed, and with light bed-clothes.

In women of feeble constitutional powers, a nourishing diet, the moderate use of wine or beer, warm clothing, daily exercise, agreeable mental occupation, early hours, and tonic medicines, will prove highly beneficial. With regard to the class of tonics. I have seen the greatest good from the various preparations of cinchona, either with or without the mineral acids; these being preferable, as a rule, to the ferruginous tonics.-In all cases, stays and tight-lacing are to be forbidden; and either sponging the lower part of the trunk and the hips with cold water will be useful, or the tepid hip-bath may be employed, especially where the patient has been in the habit of using it. So also, it will always be preferable to advise a discontinuance of sexual intercourse, and in many instances to strongly urge the patient to sleep in a bed separate from her husband. These rules are to be more strictly attended to at all those periods when the catamenial flow would be on were the woman not preguant; and it is advisable for the practitioner to calculate these dates for the patient, and to tabulate them, so that no mistake may be made. There can be no doubt that the influence of the ovarian or menstrual molimen is felt to a considerable extent by some women during pregnancy, especially in the earlier months; and hence greater precautions must be taken at the times when this influence is in action to prevent that congestion occurring which is the forerunner of hæmorrhage and abortion.

When the disposition to abortion is dependent upon a diminished vitality of the uterine system or functional weakness of its nutritive vessels, Dr. Metsch says that tonic and stimulant medicines acting powerfully on the circulation of the uterus are required; and of all such substances savine is the most to be relied on.* The very careful selection of appropriate cases for the use of this powerful drug is necessary; local or general plethora, or serious disease of any part contra-indicating its use. If the proneness to abortion depends upon augmented irritability and contractility-a condition not always opposed to the first-named—the savine alone does not suffice; and then Dr. Metsch administers the ergot of rye with an infusion of savine. Moreover, if former abortions have been attended with great urinary irritation, this physician recommends the addition of a few drops of tincture of lytta to each dose of the medicine. all instances regulation of the diet, abstinence from sexual excitement, and rest in the horizontal position as long as pain is present, are indicated. Although Dr. Metsch relates several cases, in proof of his confidence in the utility of savine and ergot being well-founded, vet I am strongly disposed to advise my readers not to follow the plan of treatment he recommends without some special reason. I have never vet seen a case where I could adopt it with the certainty of its being beneficial; and the remedies seem to me so calculated in the majority of instances to do harm, that I am afraid of them. This opinion is given with the greater confidence because it is believed that from simpler remedies we may obtain all that can be desired.

One of the best agents with which I am acquainted in the troublesome cases of repeated miscarriage, occurring in weak and irritable women in whom there is an absence of vascular congestion and any specific disease, is assafætida. This agent was first recommended by

^{*} Zeitschrift für Geburtkunde. Band XXVI., pp. 339, 355. Berlin, 1849.

Dr. Laferla, of Malta; * who says that he thought of it while reflecting upon those cases in which the fœtus having reached a certain period of development dies prior to birth, the mother in this way sometimes bringing forth a succession of dead infants. He was disposed to attribute the occurrence to debility or inertia of the uterus; and in searching for means to invigorate the condition of this organ without inducing its contractions he remembered Sydenham's commendations upon assafætida in hysteria, and especially in cases of debility of the womb. Whether these views are correct or not it is certain the medicine does great good, especially in nervous susceptible women who are so prone to abort. The dose which I usually administer is about five grains of the extract every night at bed-time; and I generally take care that the patient shall have had from three to five drachms before arriving at that period of her pregnancy at which she has formerly aborted. the drug gives rise to dyspepsia with cardialgia, as it sometimes will, its use should be completely suspended for a few days.

If the previous interruptions to the pregnant condition have been due to the effect of the syphilitic poison, there is no remedy so valuable for stopping the further ravages of this disease as mercury. Mr. Langston Parker believes that if a woman has been diseased previous to her pregnancy, and at the time of conception has a well-marked constitutional syphilitic taint; or, if healthy at the time of conceiving, she contract a primary sore, and become constitutionally diseased early in her pregnancy; then there may be a hope of cure, during gestation, with a prospect of preserving the child, if

^{*} Medico-Chirurgical Review, New Series. Vol. VI., p. 266. London, 1847.

an appropriate treatment be adopted. But, if the woman has been perfectly healthy previous to her conceiving, and the ovum be diseased by the semen of a tainted father, and the mother become subsequently affected through the medium of the fœtus in utero, there is little hope of cure till after delivery.

In administering mercury to pregnant women any one of the usual preparations may be resorted to; but for many considerations I frequently give the preference to the bichloride. The chief reasons for this selection are the ease with which it can be taken, the almost certainty that it will not produce salivation, and the length of time for which it can be persevered with. Under its influence the patients regain a state of sound health to which they may have long been strangers; they increase in weight; the secretions become natural; they eat and sleep well; and none of the functions of the body are disturbed in any way. A dose, varying in strength from the sixteenth to the eighth of a grain, may be given twice or thrice daily, for two or three months; and it should be administered either in solution or in a pill, and with a small quantity of henbane or opium to prevent any irritation of the intestinal mucous membrane. Moreover, although the chemist may regard a mixture of the bichloride of mercury and bark as an unscientific compound, yet experience has taught me that it is very valuable in many cases where the influence of this metal is needed in an enfeebled or strumous subject. A favourite formula, is one drachm of the pharmacopæial solution of the bichloride, the same quantity of the compound tincture of bark, and an ounce of peppermint water.-In cases where it is necessary to get the system quickly under the influence of mercury, the combination of inunction with the mercurial vapour bath, will more safely and easily effect this than any other proceeding.—When a patient comes under treatment soon after a miscarriage and before again becoming pregnant, it is of course necessary that her husband should undergo a mercurial course as well as herself.—With regard to the use of iodide of potassium in these cases I can say but little. I have no faith in its doing any permanent good; and knowing its value in causing the menstrual flow in certain forms of simple amenorrhoa, I should be afraid of its directly producing abortion.

When the history or symptoms in any particular case seem to indicate that the previous fœtal deaths have been due to disease of the placenta, the treatment must -in the present state of our knowledge-partake somewhat of an experimental character. The fœtal type of respiration resembles that of fishes; for just as the blood of the fish is sent into the vessels of the gills to be purified by the oxygen in the surrounding water, so the blood of the fœtus is sent into the tufts or terminal branches of the fœtal portion of the placenta to be exposed to the oxygen contained in the maternal blood. Now Dr. Simpson has very ingeniously suggested that by the administration of certain agents we may render the maternal blood a more highly oxygenating medium than it is ordinarily; so that, when it is applied to the fœtal placental tufts, it may make up, by the quality or intensity of the respiratory change which it there produces, for that loss of quantity which is a necessary consequence of a portion of these placental tufts being already destroyed by disease.* With this view the patients have been kept constantly on small doses of alkaline salts, such as chlorate of potass, nitrate of

^{*} The Obstetric Memoirs and Contributions of James Y. Simpson, M.D., &c. Edited by Drs. Priestly and Storer. Vol. II., p. 459. Edinburgh, 1856.

potass, bicarbonate of soda, &c., given several times a day on an empty stomach; just as Dr. Stevens proposed to do for the purification of the non-arterialized blood of fever and cholera patients. Dr. Simpson generally gives from ten to thirty grains of the chlorate of potass several times a day; for out of every eight atoms of the salt, as many as six atoms consist of oxygen. gentleman says that patients have frequently spoken of these salts as having a perceptible influence on the strength of the movements of the fœtus; and if they act in the manner supposed on the maternal blood, the fætus must, under their use, be placed in a better and purer atmosphere, and in this purer atmosphere-so to speak-will be capable of living for a few weeks longer than it would otherwise have done. Very possibly the use of chalybeates might invigorate the child, and prevent those placental diseases-such as fatty degeneration-which may perhaps be connected with want of power in the fœtal economy or circulation.

There is another plan of treatment which is applicable to these cases, as well as to those where fœtal life has been extinguished in successive pregnancies at about the same time, from any cause; and this is, the induction of premature labour at about the seventh or eighth calendar month. Probably every obstetric physician has met with instances in which this practice has been successfully adopted. The following case is a good example of its value:—

In July, 1858, I delivered a lady of a still-born female child at the full term of gestation. The placenta was affected extensively with fatty degeneration. The result of the labour caused great mental distress to the parents, as it was the third pregnancy which had ended in the same unfortunate manner; but it was not altogether unexpected by the mother, as no foctal movements had been perceived for the fourteen previous days, and the lady had suffered from weakness and great depression of spirits. A careful investigation of the medical history of both the parents threw but little light on the case; for it could only be learnt that the mother had a hereditary tendency to phthisis. On the 24th November the cata-

menia ceased, after having been on for five days; and a few weeks afterwards I was informed that my patient was pregnant. When it was found subsequently that this statement was correct, permission was readily obtained to bring on premature labour when the eighth month was reached. Accordingly on the 1st September, 1859, I introduced a small sponge tent into the os uteri, and left it there. At the same time a common exhausting glass was frequently applied to each nipple. Uterine contractions suggested on the following day, which were kept up by the administration of full doses of ergot; until, after an easy labour, delivery of a delicate female infant was safely accomplished. The mother made a speedy recovery; and the child is now—January, 1860—strong and healthy.

II. The treatment of Abortion when expulsion appears unavoidable. The measures to be adopted under these circumstances require to be selected with great caution; because unless the expulsion of the contents of the uterus seems to be quite inevitable, attempts should be made to prevent it. On the other hand care must be taken to guard the patient from the dangerous consequences of retaining the ovum when it is blighted or detached from the uterus, and when it can therefore only be regarded as an irritating foreign body.

Let us suppose that the practitioner is called upon to treat a case of threatened abortion at the third or fourth month, where there is hæmorrhage, slight rigors, pain in the back and groins, and general depression, but an absence of frequently-recurring, bearing-down, expulsive pains, like those of labour. His first duty will be to make a careful vaginal examination; and if the os uteri be found firm and unyielding, or only slightly open, his efforts are to be directed towards controlling the hæmorrhage and quieting the uterus. To accomplish this the strictest tranquillity is to be enjoined; all cold applications to the hypogastrium-so often resorted to—are to be avoided, since they only serve to induce uterine contractions; acid drinks, lemonade, &c., may be freely given; and a full dose of opium should be administered, either by the mouth, or, often preferably, by the rectum. The beneficial effects of this drug

are usually very striking; and I have known it act efficiently even when the os uteri has been so dilated as to admit the finger and allow of the membranes being touched. Sometimes astringents do great good; no remedy of this class being more efficient than gallic acid in frequently-repeated doses of ten grains, and none more useless than the often vaunted acetate of lead. If the os uteri, instead of being firm, is soft and relaxed, opium will generally do harm; and I have then found the compound tincture of cinnamon a valuable medicine. Two drachms should be given every two or three hours, until the bleeding ceases, or until a sense of nausea is experienced. Where the hæmorrhage is rather abundant, the gallic acid may be advantageously prescribed in combination with the cinnamon. When the patient is weak and anæmic, the tissues soft, and the circulation languid, the ferri ammonio-sulphas, or iron alum, is preferable to the cinnamon and gallic acid; ten grains being administered in distilled water every four or six hours.*

In cases where the hæmorrhage is very profuse we may be sure that there is considerable separation of the ovum from the uterus; and the chances of preserving the fœtus will be small. Nevertheless, unless uterine pains are also present, we may try to prevent expulsion; and in such cases no single remedy is so valuable as opium in full doses. Supposing that under such circumstances a vaginal examination be made, and a small

^{*} Dr. Burns speaks very highly of the effects of arsenic in the hæmorrhage of threatened abortion, but as I have had no experience of the utility of this metal in such cases, it is not mentioned in the text. This gentleman says that he knows of no remedy so prompt in arresting not only the hæmorrhage but the uterine contractions. He gives twenty drops of Fowler's solution at once, and then ten drops every ten minutes. This agent is stated to be equally valuable in menorrhagia, and in cases of prolonged or excessive lochial discharge.—American Journal of Medical Sciences, New Series. Vol. XXXVIII., p. 393. Philadelphia, 1859.

mass felt protruding through the os uteri, it is not always easy to decide whether this is an ovum or a coagulum of blood. Moreover, the patient may not be pregnant even; and there may be merely a clot of blood, from retention of the menses. The distinction between a clot and an ovum is on all grounds very important therefore. If in pregnancy we attempt to remove a clot, with which Nature perhaps has plugged up the ruptured vessels, we shall be doing that which it is our object to prevent. Hence, to decide this point, the practitioner must keep his finger in contact with the substance lying in the os uteri, and wait for the accession of a pain; and then ascertain whether the presenting mass becomes tense, advances lower, and increases somewhat in size, as will happen when it is the "On the other hand, if it be a coagulum, which it is well known assumes a fibrous structure, it will neither become tense nor descend lower, but be rather compressed. Generally speaking, the ovum feels like a soft bladder, and at its lower end is rather round than pointed; whereas a plug of coagulum feels harder, more solid, and less compressible, and is more or less pointed at its lower end, becoming broader higher up. so that we generally find that the coagulum has taken a complete cast of the uterine cavity. If we try to move the uterus by pressing against this part, it will instantly yield to the pressure of the finger, if it be the ovum; whereas the extremity of a coagulum under these circumstances is so firmly fixed, that when pressed against by the finger the uterus will move also. When abortion happens at a later period of pregnancy, we shall be able to feel the different parts of the child as the os uteri gradually dilates; viz., the feet, or perhaps the sharp edges of bones, although we cannot distinguish the form of the head, from the cranial bones being so compressed and strongly overlapping each other."*

When the bleeding is so continuous as to endanger life, or when it occurs in combination with uterine contractions, and particularly with rupture of the membranes, then the expulsion of the product of conception is to be hastened. With this object the os uteri may be irritated and dilated by the introduction of the finger, while the ergot of rye should be given in drachm doses every half hour. Where the symptoms are not urgent, it will often be advisable to trust at first to Nature alone; the practitioner contenting himself with watching that no untoward circumstances arise. If the uterine contractions, however, are slight, a dose of ergot-with or without one scruple of the biborate of soda-can do no harm; and by making the pains stronger, it may help to cause the detrusion of the ovum entire, a circumstance which is much to be desired. Not unfrequently the os uteri dilates so very slowly, that the expulsion is considerably delayed. Under such circumstances, if serious flooding be present, a bladder partly filled with ice and salt should be applied over the pubes, and enemata of cold water repeatedly used; but these failing, the tampon or plug is the only resource. The best material with which I am acquainted for plugging the vagina is cotton wool; small pellets of this substance being introduced one after the other, and pushed right up, and even into the os uteri, until the vagina is quite full. Dewees recommends the use of a sponge large enough to fill this canal, soaked in vinegar. The blood gets infiltrated into the pores of the sponge, and coagulating, forms a

^{*} Hohl On Obstetric Exploration. Quoted from Dr. Rigby's System of Midwifery, p. 93. London, 1844.

large clot; which not only seals up the vagina hermetically, but is borne without inconvenience for many hours. Whatever material be used, care must be taken to ascertain that the body of the uterus is not enlarging under the influence of internal hæmorrhage; an occurrence which is not likely to take place, however, unless the pregnancy has advanced to the fifth month. When the plug is withdrawn at the end of twelve hours or so, the mouth of the womb is generally found fully dilated, and the fœtus and membranes projecting through it; so that these structures can be readily removed by hooking the finger into them, or seizing them with a pair of forceps.

In cases where the fœtus is expelled alone, and the placenta and membranes do not at once follow, it may be advisable to wait about an hour-provided there is no bleeding-to allow the uterus to throw them off spontaneously. If this practice fails, attempts must be made to remove the structures. The ergot of rye will often excite contractions, and cause the uterus to empty itself; or two of the fingers may be introduced into the uterine cavity, and the mass taken hold of; or a pair of slender forceps, deeply grooved at the extremity, may be gently passed, and the substance seized and withdrawn. Galvanism may also occasionally be resorted to, in the place of these measures; the positive pole of the battery being applied to the upper part of the spine, and the negative to the cervix uteri through a glass tube. In every instance stimulants should be freely administered if the woman be much exhausted; and she should not be left until the hæmorrhage has been controlled, and the system has rallied.

Before concluding this chapter it must be noticed that the following train of symptoms sometimes occurs, and places the patient's life in great danger:—

A woman aborts at about the third or fourth month, and the substance expelled is thrown away instead of being examined by the medical man. For the succeeding twelve or twenty days everything progresses most satisfactorily, and the usual habits of life have been resumed. But suddenly, possibly after a little more exertion than ordinary, a violent attack of flooding sets in, giving rise to great depression and alarm; and the practitioner is hastily summoned. He, finding no general symptoms to account for the hæmorrhage, very properly makes a vaginal examination; but merely discovers that the os uteri is small and contracted, the cervix onlyslightly or not at all developed, and the body perhaps rather larger than common Under the influence of cold, astringents, ergot, galvanism, the plug, or the unassisted efforts of Nature, all bleeding ceases in the course of a day or two; but the cessation is of short duration, for the same symptoms return, and the patient becomes greatly prostrated. Again, and perhaps again this happens, unless a correct diagnosis be formed, and proper treatment adopted. The cause of the mischief in all probability is the retention of a small portion of the ovum, perhaps—as in the case of Mr. Humphreys already quoted-of a piece not larger than a shilling; and unless this is got away, the hemorrhage is very likely to return, and in the end to prove fatal. The treatment I have successfully practised, and hence would strongly recommend, is this:—The mouth of the womb is to be dilated by the introduction of sponge tents; a small one being first employed, which at the end of twelve hours is to be replaced by a larger one, and this by another, until the requisite amount of dilatation be obtained. By means of the finger passed into the uterine cavity, or by the aid of a pair of forceps, the piece of ovum is to be drawn away; a proceeding which can generally be accomplished provided the substance is not adherent to the walls of the uterus. In the event of this being the case, the cavity must be explored by the finger to discover the seat of attachment; and then the substance is to be scraped away either by Recamier's curette or by Simpson's uterine gouge. In careful hands the adoption of this mode of treatment will be followed only by the best results. The bleeding will permanently cease; and ferruginous tonics, with a free animal diet, will ultimately restore the patient to perfect health.

After an abortion of even a favourable character, as much caution and care will generally be required as after a labour at the full term. Strict rest in bed should be enjoined for a few days; a nourishing diet, with or without stimulants, as may be necessary, is to be allowed; and opiates, cooling aperients, or astringent tonics are to be given, according to the indications present. Only a gradual return to the usual occupations is to be permitted; and it will be advisable to forbid sexual intercourse until a few weeks after the general health has been completely re-established.

CHAPTER VI.

THE EXAMINATION OF SUBSTANCES EXPELLED FROM THE UTERUS, ETC.

1. An early ovum :- mode of examining it :- the appearances of the decidual coverings : - decidual cotyledons, and their office. - 2. Moles: the nature of these substances .- 3. The Vesicular mole :- its origin in cystic disease of the chorion :- general characters of the disease.-May true hydatid cysts be formed in utero?-4. The menstrual decidua :- its identity with the true decidual covering of the ovum. -5. Membranous formations from the vagina: -exfoliation of the vaginal epithelium.

THE practitioner of obstetric medicine is not unfrequently called upon to give an opinion as to the nature of some substance which has been expelled from the uterus or vagina; and especially perhaps may he be required to say whether such substance is the result or not of conception. The fair fame of more than one chaste woman has been blotted by the ignorance or carelessness of the examiner, under these circumstances; but it is to be hoped that the days when such errors were made have permanently passed away.

The substances which may be expelled from the female organs of generation are these :- 1. An early ovum; 2. A mole; 3. A vesicular mole; 4. The menstrual decidua; and, 5. Membranous formations from the vagina.

These will now be considered seriatim.

1. AN EARLY OVUM. - Within the first month, the ovum is generally so broken up during its expulsion, that its texture can hardly be recognised: but after the fourth or fifth week the structure usually remains sufficiently distinct to allow of its nature being made out by a careful scrutiny. To examine the mass properly, it should be soaked in water for a day or two, so as to remove the coagulated blood with which it is infiltrated, and the component parts are then to be cautiously and slowly separated under water; should an embryo or a portion of one be discovered, the nature of the substance (see p. 215) is of course decided. It frequently happens, however, that although we fail to find the embryo, yet we may be able to recognise the ovum sufficiently to assert that it is the product of conception.

In an early abortion, the whole lining of the uterus, together with the decidua reflexa or ovuli, is frequently thrown off entire; constituting a triangular-shaped cast of the uterine cavity. The outer surface of this mass consists of a soft, red, uneven or shaggy pulpy membrane-the uterine decidua; the internal surface of which is smooth, generally thrown into slight folds. and studded with very minute depressions, scarcely perceptible to the naked eye. These characters are perhaps scarcely sufficiently distinctive to enable us to speak positively as to the nature of the substance. But there is another remarkable feature in the organization of this peculiar product, which was first pointed out by Dr. Montgomery, and which he thus describes: -" Repeated examinations have shown me that there are, on the external surface of the decidua vera, a great number of small cup-like elevations, having the appearance of little bags, the bottoms of which are attached to, or embedded in its substance; they then expand, or belly out a little, and again grow smaller towards their outer or uterine end, which, in by far the greater number of them, is an open mouth when separated from the uterus: how it may be while they are adherent I cannot say. Some of them, which I have found more deeply embedded in the decidua, were completely closed sacs. Their form is circular, or very nearly so; they vary in diameter from a twelfth to a sixth of an inch, and project, about the twelfth of an inch, from the surface of the decidua. Altogether, they give one the idea of miniature representations of the suckers of the cuttle-fish."* This author regards these "decidual cotyledons"-or "Montgomery's Cups," as they are now often termed-as reservoirs for nutrient fluids separated from the maternal blood, to be thence absorbed for the support and development of the ovum. The fact that during the early periods of gestation the ovum derives its nourishment by imbibition through the connexion existing between the decidua and the villi on the outer surface of the chorion, renders the correctness of this opinion highly probable. Moreover, as the decidua is now known to consist of the hypertrophied mucous membrane of the uterus, so it is almost certain that these cups are identical with those utricular glands or follicles which are found as a system of tortuous canals ramifying through this membrane in the unimpregnated state.

Internal to the uterine decidua is the ovular or chorial decidua; the outer surface of which is nearly smooth, while the inner is marked by irregular depressions or shallow pits leading to tortuous canals. These lacunæ have been occupied by the arborescent villi which shoot from the surface of the chorion, and which thus form the bond of union between the fœtal and the maternal membranes. These villi are never found but on the chorion or uterine surface of the placenta; and hence their discovery is a sufficient proof of the nature of the substance under examination.

^{*} Opus jam citat. p. 253.

It is important to remember that an embryo may die, and perhaps become absorbed or dissolved, and yet that its membranes may not be expelled for weeks or months afterwards. Thus a woman becomes pregnant just before her husband leaves for a voyage of eight or nine months' duration. On his return an ovum of the second or third month happens to be expelled. Now, unless we can explain this circumstance, the woman may have the most unjust suspicions cast upon her reputation. At one of the meetings of the Pathological Society, Mr. Thomas Ballard exhibited a specimen proving the truth of this observation.* It consisted of a portion of ovum, resembling a small placenta, from which the cord and thinner portions of membrane had disappeared; and it was expelled on the 4th March, 1857, after a modified labour of six hours' duration, attended with a good deal of hæmorrhage. evidence of its having been retained until the full period of gestation is as follows:-In October, 1856, the patient engaged Mr. Ballard to attend her in her expected confinement in the following March; she being then four months advanced in pregnancy. The catamenia had not appeared since the middle of June. The usual signs of pregnancy existed until the 18th October, when she had a discharge of blood, which continued until Christmas, though only very slightly after the first two days. She had also during this time constant pain in the back, and she no longer increased in size; but she was not conscious of a solid substance having passed from her at any time. The pain and slight hæmorrhage entirely ceased at Christmas. After this date she had a continued discharge of watery fluid

^{*} Transactions of the Pathological Society of London, Vol. VIII., p. 281. London, 1857.

and whites, but no return of pain until the specimen exhibited was expelled at the beginning of March.

2. Moles.—Much difference of opinion has existed among authors as to the nature of those substances which are commonly described under the term mole. This confusion has chiefly arisen from very various substances having been indiscriminately classed together under this epithet; such as polypi, condensed coagula

of blood, decayed ova, &c.

My own opinion is that there are but four kinds of moles, properly so called; and that they are all the result of conception. Thus, we may have presented to us the deciduæ with both its layers and cavity infiltrated with blood: or a placenta which has continued its growth after the death of the fœtus; or the degenerated remains of the placenta: or the hydatidiform or vesicular mole.—The first substance may have its origin in this wise: - During the earliest weeks of pregnancy, from a sudden shock or other cause, blood may be effused into the decidual cavity, filling it with a clot, and generally obliterating all trace of the embryo. If the substance be quickly expelled it will exhibit the triangular shape presented by the uterus at the commencement of gestation; but if retained, firm layers of fibrine may become formed upon its external surface. and it may increase to the size of an orange or even get larger. Supposing no blood is poured into the decidual cavity, the entire embryo may be found, or only a portion of it; while the deciduæ with the coagulated fibrine form a pale yellowish fleshy envelope. varying from the eighth of an inch to one inch in thickness .- The second species arises, when the fœtal germ, dying soon after conception, becomes atrophied or absorbed: while the placenta and membranes continue to grow. These tissues derive their nourishment from the inner surface of the uterus, and become transformed by progressive development into an indistinctly fleshy, vascular mass. This may be retained in the uterus for months; giving rise during this time to many of the symptoms of normal pregnancy, together generally with repeated attacks of flooding. Sometimes the hæmorrhage is almost constant; in many cases it comes on irregularly, after undue excitement; while in others it is periodical, and simulates an attack of menorrhagia. -The third and most uncommon form of mole consists merely of the placenta or a portion of it; which having been imperfectly nourished on the uterine surface has become almost an amorphous mass. Usually entire groups of the villi are found, on a microscopic examination, to have been altered; the most frequent metamorphosis consisting of an infiltration of a greyishbrown molecular substance, which destroys their transparency, and renders them more or less opaque. In the early stages of this disease the opacity is confined to the clavate extremities of the villi; but as the accumulation increases the whole of each villus gets infiltrated. As the villi further degenerate, their diameter becomes lessened; and groups of them collapse. The tissues of the stems of the villi are also frequently seen to be in a state of fatty degeneration; and this change may sometimes be found affecting the arteries of the umbilical cord at their insertion into the placenta. The affected portions of the placenta are generally observed to be quite bloodless. If this degeneration of the villi occur at an early period, the embryo will not be found; as it has probably been partly or completely dissolved. The remains of the umbilical cord, enlarged and pulpy, may sometimes be made out; the free extremity being ragged or shreddy.-Organized

bodies, somewhat resembling to the naked eye these masses of degenerated placenta, may be discharged from the uterus. They are usually pale-coloured, soft, ovalshaped substances of variable size: they are frequently mixed with coagula: no chorion villus can be discovered in any portion of their structure, but merely connective tissue, with cells of various kinds: and there is no vestige of a cavity for the reception of the embryo. It is probable that these substances merely consist of a new formation of connective tissue, which has been formed on the uterine wall quite independently of impregnation; and that they have been thrown off by the hæmorrhage to which they give rise.-The fourth species of mole is of more importance than the other varieties; and hence may advantageously be treated of in a section by itself :-

3. The Vesicular Mole.—The chorion is subject to certain morbid alterations; the most remarkable of which is the transformation of its villi into vesicles or cysts, which are intimately united together by little pedicles. The product thus arising from this cystic disease of the chorion is known as the vesicular or hydatidiform mole; the cysts being likewise spoken of by some authors as "uterine hydatids." It seems to me, however, very desirable to abolish this latter designation; inasmuch as it conveys and perpetuates an erroneous impression as to the nature of these bodies. Cruveilhier first demonstrated their non-hydatid nature; and all succeeding observers who have carefully examined their structure have confirmed the statements of this distinguished author.

The general characters of this disease can be studied in any pathological museum, and hence they are generally well known. A portion, or perhaps the whole, of the chorion is covered with pellucid vesicles containing a limpid serous fluid; each vesicle having long, slender, and often branching pedicles. The sacs are oval or pyriform-shaped; their walls are clear, or marked with opaque dots; and they may be simple, or may present other cysts projecting from their tissues. Two questions will arise in the mind of the physician who examines a vesicular mole. First,-What is the nature of the change in the chorion villi which results in the production of these vesicles? and second,-What causes the change ?-With regard to the first question, Mettenheimer insists that these bodies are cysts: and Paget adopts the same view. The process of their formation is thus described by these pathologists:-Certain of the cells in the proper villi of the chorion, deviating from their cell-form, and increasing disproportionately in size, form cysts, which remain connected by the gradually elongated and hypertrophied tissue of the villi. On the outer surface of the new-formed cysts, each of which would, as it were, repeat the chorion, and surpass its powers, a new vegetation of villi sprouts out, of the same structure as the proper villi of the chorion. In these begins again a similar development of cysts; and so on ad infinitum. Each cyst, as it enlarges, seems to lead to the wasting of the cells around it; and then, moving away from the villus in which it was formed, it draws out the base of the villus, which strengthens itself, and forms the pedicle on which the cyst remains suspended. *- Now Gierse. and subsequently Dr. Graily Hewitt, have dissented from these opinions. In a specimen which the latter gentleman had the opportunity of submitting to micro-

^{*}Lectures on Surgical Pathology. By James Paget, F.R.S. Vol. II., p. 64. London, 1853.

scopic examination, he found the vesicular bodies to possess the same structure as that of normal chorion villi; but the cells on the surface were wider apart, and the villi were distended by a serous fluid, giving rise to the enlargements. From this it would appear that in the healthy villi and in the altered ones we have precisely the same structures; and hence it cannot be necessary to have recourse to a cyst theory to account for the appearances. If these observations be correct it necessarily follows that in the vesicular mole we have not a new formation, but simply an alteration and degeneration of existing structures.*

The second point to be considered is,-What are the circumstances which induce this pathological change? On this point Dr. Graily Hewitt differs materially from other observers. It has been universally supposed that the transformation is the starting-point of the affection ; that the disease of the chorion was the cause, the death of the embryo the effect. On the contrary, this gentleman contends that the death of the embryo occurs first, and the chorionic transformation subsequently. He argues, as just noticed, that the hydatidiform mole results from a degeneration of structures arrested in their development. Death of the embryo involves arrest of chorionic development, but not necessarily cessation of vitality in the chorion villi; for these may continue to grow provided the decidua be not separated from the uterus, and this peculiar growth will then result in the formation of the vesicular mole.-After attaining a certain degree of development, the chorion villi do not appear to be capable of undergoing the change in question; the conditions necessary for that

^{*} Transactions of the Obstetrical Society of London, Vol. I., p. 249. London, 1860.

change are not present, and if the fœtus dies, no hydatidiform mole can be produced. The middle or end of the third month is probably the limit within which the change can originate. In most of these cases no trace of the embryo is to be found; or if found, it is very small, and very strikingly disproportionate to the bulk of the mole. The evidence on this point shows, then, that the embryo perishes at so early a period as to leave no traces behind it; or, in other words, that it does not survive a period, which may be roughly fixed as the end of the second month.

The question has sometimes been raised as to whether a portion of placenta left in the uterus—that portion extracted at the time of labour being free from cystic degeneration-can subsequently become the seat of cystic disease. Thus a pregnant woman may lose her husband; at the time of labour part of the placenta may be retained; this portion may undergo-let us for a moment suppose-cystic degeneration, become enlarged, and when expelled some weeks or months afterwards may give rise to most injurious suspicions against the widow's virtue. Now, can this really happen? In the present state of our knowledge it may only be replied that such an occurrence is in the highest degree improbable; but there are two conditions which prevent our saying that it is impossible. One possible occurrence is that a small portion of the chorion villi may have become accidentally separated from the embryo at an early period, and have been altered; while the remainder has grown normally. The other condition which must be admitted arises in cases of twin gestation, when one ovum perishes and the chorion villi degenerate. The diseased mass may then be retained after the expulsion of the healthy fœtus at the normal termination of gestation; or it may be expelled some weeks previously without interfering with the other embryo and placenta. This latter occurrence seems to have taken place in the case of the celebrated anatomist Bechard; whose mother, when she was about four months advanced in pregnancy with him, expelled a large vesicular ovum.

The vesicles when expelled vary in size from a pin's head to a large grape, being connected with each other in bunches by very fine pedicles. They generally also exist in great numbers, so as to form large flocculent vesicular masses the size of the adult head, and when passed they are tinged with blood; so that if placed in water they will often be found to resemble-to use the graphic words of Dr. Gooch-"myriads of little white currants floating in red currant juice." The symptoms which indicate their presence in the uterus are not sufficiently distinct or constant to be entitled to much confidence; for they merely consist of some of the early signs of pregnancy, enlargement of the uterus, and irregular vaginal discharges-sometimes of blood, sometimes of water. In many cases it has been also noticed that the uterus is disproportionately large for the supposed period of pregnancy; and that it is less firm than in healthy gestation. It need scarcely be said that there is an absence of fœtal movements, and that no fœtal heart-beat can be detected.*

^{*} The remarks in the text of course show that I believe these vesicular moles to be undoubtedly due to a prior act of feecundation. The only recent author of note who decidedly maintains the opposite opinion is Dr. Bedford. This gentleman, arguing from the often fallacious guide of analogy, says:—"There is much discrepancy of opinion as to the cause of these hydatid growths. The weight of testimony appears to refer their origin to conception, many authors of high name contending that the presence of these growths is undoubted evidence of previous pregnancy. That a discased ovum may form the nucleus of hydatid development in uter, cannot be denied. But, on the other hand, we believe that they may exist independently of conception, in the same way that polypi, fibrous

In conclusion a few words may be said upon the question as to whether true hydatids can be discharged from the uterus. It seems to me that the possibility of this occurrence cannot be denied. Just as hydatid tumours may form in the liver, spleen, omentum, muscular structure of the heart, and bones, &c.; so they may arise in the walls of the uterus, and acephalocysts be discharged owing to the rupture of the tumour into the uterine cavity. So rare, however, is this occurrence, that I only know of one recorded instance of it. Rokitansky, speaking of this disease, states-"Cysts are very rarely formed in the uterus; we have not met with a single example in Vienna, and I myself have only inspected one case of uterine acephalocysts."* Should another such instance occur in the practice of any one of my readers, he will find no difficulty in detecting the true nature of these parasitic bodies.+

4. The Menstrual Decidua.—When we examine, with a quarter-inch object-glass, the normal catamenial fluid, it will generally be seen to contain much epithelial debris; showing thereby that the healthy mucous membrane of the uterus has a periodical tendency to shed its superficial cells. The uterine mucous membrane becomes congested and swollen, I believe, in most women at each monthly period; but in some forms of dysmenorrhea it gets more hypertrophied, and being exfoliated, is expelled with bearing-down pains in the

tumours, and various other substances, sarcomatous and osseous, are occasionally found in the virgin womb."—Clinical Lectures on the Diseases of Women and Children. By G. S. Bedford, M.D. Fourth Edition, p. 43. New York, 1856.

^{**}A Manual of Pathological Anatomy. By Carl Rokitansky, M.D., &c. Sydenham Society's Edition. Vol. II., p. 291. London, 1849.

+ See the author's Manual of the Practice of Medicine, Third Edition, p. 267, for an account of the hydatid tumour and its structure, &c.

menstrual discharge. This dysmenorrhœal membrane is generally passed in fragments; but occasionally it comes away whole, forming a complete cast of the entire uterine cavity. It is rough externally, having a cribriform appearance produced by the pores of the utricular follicles or glands; whilst internally it is smooth and moist. The menstrual decidua is in structure identical with the true decidual covering of the ovum; but it may generally be distinguished from it by the circumstance that it is more flimsy and unsubstantial in character, that it is chiefly made up of layers of flattened or cylindrical epithelium, and that its gland ducts are very much smaller.

Occasionally small fibrinous substances, somewhat resembling an almond in shape and size, are expelled from the cavity of the uterus. These consist either of condensed coagula of blood, or of a layer of coagulable lymph partially organized, or of dysmenorrheal membranes around which blood has been effused. On making a section of one of these latter masses, it will be found to consist of an external coat of coagulated blood lined by the membrane, the smooth surface of which is laid open by the incision. Mad. Boivin has related a case where a tumour of this kind was expelled, and where it was turned inside out; so that the smooth surface of the membrane formed its external covering. She supposes this happened by the upper portion of the membrane having been first detached from the uterus by blood insinuating itself between the two surfaces, and forcing the adventitious sac inwards and downwards, until at length it was completely inverted, and of course its surfaces reversed.* These substances are doubtless often due to

^{*} Traité Pratique des Maladies de l'Uterus, et de ses annexes. Par Mad. Boivin et A. Dugès. Tome II., p. 419. Paris, 1833.

some peculiar inflammatory action in the uterus producing false membranes, similar to those morbid products occasionally found on hollow viscera lined with mucous membrane. They are all formed quite independently of sexual intercourse.

5. Membranous Formations from the Vagina.— Exfoliation of the vaginal epithelium occurs in certain abnormal states of the system, especially when astringent injections are being used; the epithelium mixed with mucus coming away in flakes, or being passed in masses which form complete casts of the flattened vaginal canal. These pseudo-membranous, parchment-like patches are seen by the microscope to be composed of squamous epithelium: and they are generally found to be sufficiently strong and firm to bear free handling. Many museum preparations labelled "False Membranes from the Uterus," very possibly really consist of these vaginal substances.

A very remarkable feature in the case of an unmarried lady suffering from hysterical neuralgia, which simulated all sorts of diseases, was the almost daily formation and expulsion, with considerable pain, of these membranous casts of the vagina. Dr. Montgomery, under whose care the lady was placed, says that they were quite transparent, of a light straw colour like gold-beater's leaf, about two and a half inches long, hollow, the cavity about an inch in diameter, and closed at one end but open at the other. The patient had preserved three dozen bottles full. It is remarked that they might easily have been mistaken for a portion of the transparent membranes of the ovum.

The amount of suffering induced by the temporary loss of the vaginal epithelium varies. Sometimes the smarting is acute, so that a tactile examination cannot

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be borne; but generally the epithelial coat is reproduced very quickly, and then there is merely some slight itching and irritation. One patient complained of great uneasiness in sitting down, and of a peculiar crawling sensation in the vagina; while another, under my own care, compared her pains to those felt from a burn. Very often, however, the local symptoms are slight; only receiving notice from the practitioner when the patient presents one of the membranous formations for examination.

CHAPTER VII.

EXTRA-UTERINE GESTATION.

Introduction:—changes which occur in the uterus in misplaced gestation:—a decidua formed:—the ovum has its proper membranes, the chorion and amnion:—the growth and death of the fætus.—2. Varieties:—the tubo-ovarian, tubal, and interstitial or tubo-uterine.—3. Symptoms:—the catamenia usually suspended:—mammary changes and morning sickness:—enlargement of abdomen not symmetrical:—severe pains in pelvis:—a characteristic cry:—signs detected by a vaginal examination:—the phenomena which follow rupture of the cyst.—4. Treatment:—the precautions needed to prevent or retard rupture of the cyst:—the measures which offer a chance of moderating the hamorrhage after laceration:—the steps to be pursued after the extinction of fatal life.

1. Introduction.—The normal place of abode for the embryo during gestation, it need scarcely be said, is the cavity of the uterus. From some cause or other, however, it occasionally happens that the impregnated ovum does not reach this part; and we then have, as a consequence, a form of extra-uterine pregnancy.

Various kinds of misplaced gestation undoubtedly occur among the lower animals; though it has been asserted by at least one physiologist that this accident is peculiar to woman. Probably the earliest recorded instance is that by Felix Platerus; who describes the case of a cow, which, in 1597, conceived again during the retention of an extra-uterine calf.* So, also, it has long since been shown that this abnormal form of preg-

^{*} Observationum in Hominis Affectibus plerisque, Corpori et Animo Functionum Læsione, Dolore, &c., p. 230. Basilew, 1641.

nancy may occur in the bitch and in the sheep;* and Haller describes a pregnancy of this kind in the hare.† In the bird it not unfrequently happens that the yolk or ovulum, after escaping from its ruptured capsule in the ovary, instead of passing down the oviduct escapes into the peritoneal cavity; where it either becomes absorbed, or it may be retained without fœtal development taking place, or it may almost immediately cause the death of the hen. In these cases the oviduct still secretes the albumen, membrane, and shell; which are expelled without having any yolk in their interior.

Doubtful examples of misplaced pregnancy in the human female have been put on record, though not minutely described, many centuries since; but probably the first unmistakable case of the kind is that related by Felix Platerus. This author reports that a concubine at the end of her third pregnancy, in the year 1583, had labour pains for eight days. These then subsided, without delivery taking place; but some time afterwards a small tumour formed just above the umbilicus, from which-on an incision being made-a semi-putrid fœtus was extracted. The patient recovered, and survived the operation one year. † Cordæus, a contemporary of Platerus, Horstius of the sixteenth century, Primrose of the same period, Hildanus at the commencement of the seventeenth century, Riolanus the younger, about 1649, the Abbé de la Roque about 1682, Santorinus in the eighteenth century, Smellie, and a host of writers since this time have all reported well-authenticated cases.

^{*} The Philosophical Transactions Abridged, &c. Vol. V., p. 531. London, 1709.

⁺ Disputationes ad Morborum Historiam et Curationem Facientes.
Tomus IV., p. 795. Lausannæ, 1758.

‡ Opus jam citat., p. 229.

When this irregular form of gestation occurs, the same changes take place in the uterus as happen in the early stages of healthy pregnancy. The entire organ becomes enlarged and congested, its texture is rendered soft and spongy, the arteries and veins increase in size, and the mucous membrane gets hypertrophied so as to form a true decidua. This decidua after a time loses its vascularity and becomes atrophied; for having no office to perform, it follows the law which regulates the decay of all functionless organs. Dr. Robert Lee considers that the deciduous membrane is not always, if ever, formed in the uterus in extra-uterine conception; but that it sometimes surrounds the chorion. Almost all observers agree, however, that Dr. Lee is in error; and that if in any particular instance the decidua be not found, it is only because it has been expelled by uterine contractions in the coagula and hæmorrhagic discharge, either soon after, or just prior to, the death of the fœtus. Whether a decidua is also formed in the Fallopian tube in cases of tubal gestation is uncertain; Schreder van der Kolk asserting that such is the case, while Virchow denies it. Although the walls of the tube are entirely deficient in glandulæ utriculares, vet it seems probable that the ovum in these cases does receive an additional covering somewhat analogous to the decidua, and that its function with regard to the nutrition of the embryo is the same. It is, however, certain that in these pregnancies the ovum has its own proper membranes—the outer chorion and the inner amnion; and most frequently an adventitious cyst is developed around the whole substance, the development of which cyst only ceases with the termination of the fœtal life.

The walls of the cyst may vary in thickness from one to several lines; and usually they contract adhesions with all the surrounding viscera. The blood-vessels of the sac are often large, especially at that part to which the generally thin but expanded placenta is attached. Although it would at first sight seem impossible for the fætus to live and grow in these misplaced gestations, yet the development of its organs appears to progress at the ordinary ratio, and subject to the same general laws of normal pregnancy. "In ninety-eight cases," says Dr. Campbell, speaking of the tubo-ovarian variety, "in which we can decide, or nearly so, on the stage of pregnancy, the fœtus in seventy-nine patients died at the close of nine months, or soon thereafter; one, in the eighth; seven, about the seventh; one, in the sixth; two, in the fifth; two, in the fourth; five, in the third; and one, at the end of the first month."* When the misplaced fœtus dies, it generally undergoes decomposition. This change may either happen soon after its death; or, on the other hand, not for some years, during which time, surrounded by the cyst, it may be the cause of so little inconvenience, that the parent may again become pregnant, and bear a live child. Where putrefaction occurs, the decomposed structures give rise to inflammation in the surrounding tissues; suppuration takes place; and the fœtal bones and tissues often become removed through artificial openings in the abdominal walls, rectum, vagina, or urinary bladder. Besides this mode of termination, which greatly endangers the mother's life, there is another which is more The soft parts of the fœtus and its involucra become in part absorbed, and in part changed into a fatty substance; or the entire body becomes converted into a calcareous mass, or into cartilage or bone, and is retained for many years without the woman's health

^{*} A Memoir on Extra-Uterine Gestation, p. 110. Edinburgh, 1840.

being apparently injured. A third termination to an extra-uterine conception is the spontaneous rupture of the cyst at a somewhat early period of pregnancy; and the rapid death of the mother from the large quantity of blood which is in consequence effused into the peritoneal cavity.

If we inquire into the causes of this singular occurrence, our information appears sadly at fault. The most frequently admitted explanation is said to be found in the existence of a morbid condition of the Fallopian tube; such as undue narrowness, spasmodic contraction, excess or defect of length, paralysis, inflammation and engorgement, or induration of its fimbriated extremity. Possibly also the existence of any disproportion between the ovum and the area of the tube may prevent the passage of the former into the uterus. Some writers have imagined that mental agitation from fright during coition might exert an influence in producing extrauterine gestation; and three or four striking instances are recorded in favour of the correctness of this—at first sight—improbable view.

A remarkable circumstance connected with this subject has been especially noticed by Dr. Oldham and Dr. Arthur Farre; viz., that in a large number of cases of tubal gestation the corpus luteum corresponding with the ovum impregnated has been found in the ovary of the opposite side to that of the tube in which the ovum is developed. Thus, suppose the left Fallopian tube to contain the ovum, the right ovary may show the corpus luteum of a corresponding date, and vice versâ. The probable explanation of this circumstance seems to be this:—that at the time of the ovule quitting the ovary, the gland is embraced by the fimbriated extremity of the tube of the opposite side. This tube conveys away the ovule, and the latter then becomes feecundated in

the ordinary manner; but being delayed by the angle formed by the bending of the oviduct, the progress of the ovum is obstructed, until it has attained too great a size to permit of its entering the uterine cavity. confirmation of this view, Dr. Farre mentions that there is a preparation in the Anatomical Museum of the University of Cambridge, in which both the Fallopian tubes are seen to be grasping the same ovary; their extremities being fixed to this gland by morbid adhesions. Tyler Smith gives a different explanation of the matter; for he supposes that the ovum after descending one Fallopian tube, traverses the upper part of the uterine cavity, and then ascends the opposite oviduct by an antiperistaltic action, or by the ciliary currents which move from below upwards.-In thinking over these cases, it seems to me that the hypotheses of both these gentlemen are correct: that is to say, that sometimes the opposite tube conveys away the ovum, and sometimes the latter performs a long journey from the ovary of one side, across the uterus, into the passages belonging to the other side. My reasons are these :- The preparation in the Cambridge Museum seems undoubtedly to prove the possibility of Dr. Farre's explanation. example of pregnancy in a rudimentary horn of the uterus recorded by Professor Scanzoni,* equally satisfies me as to the justness of Dr. Tyler Smith's opinion. In this case a fœtus was partly developed in a rudimentary horn seated on the left side of the uterus. The horn ruptured, and the woman died from the resulting hæmorrhage; and at the necropsy the corpus luteum was found in the right ovary. Now it is clear that if the left Fallopian tube had stretched over to the

^{*} Verhandlungen der Physicalisch-Medicinischen Gesellschaft in Würzburg. Band IV., p. 1. Würzburg, 1854.

right side to grasp the ovary, its bend must have formed such an angle that the ovum would have been obstructed in the tube itself, and could not have reached the uterus. Hence it can only be allowed that in all probability the ovum passed through this latter organ. Bischoff also notices that he examined the body of a bitch, whose right ovary had one while the left had five corpora lutea; yet there were three ova in each half of the uterus, so that two must have crossed from the left to the right side.

2. VARIETIES OF EXTRA-UTERINE GESTATION.—Three orders of extra-uterine gestation were formerly described by authors; viz., ventral, tubal, and ovarian. In 1824, Dr. Breschet gave an account of a fourth form under the name of Graviditas in Uteri substantia.* Since this observer's day, the zeal of obstetric writers has led some of them to make as many classes of this abnormality as possible; and hence we find them detailing eight and even ten varieties. Such a minute subdivision, however, is perplexing and quite unnecessary; and partly therefore for these reasons, and partly on account of circumstances which will presently be evident, I shall only speak of three forms. These are-the tuboovarian, the tubal, and the interstitial or tubo-uterine varieties. It must be remembered that in the dissection of cases of extra-uterine pregnancy, it is by no means constantly that the exact original seat of the ovum can be made out; for the inflammatory adhesions which the cyst walls have contracted with all the surrounding tissues and organs, no less than the pressure which the fœtus has exerted upon these parts, give rise to a confused mass of disease which it is often impos-

^{*} Medico-Chirurgical Transactions, Vol. XIII., p. 33. London, 1827.

sible to unravel. Hence may be explained much of the discrepancy of opinion which has existed as to the

possible seats of an extra-uterine gestation.

The tubo-ovarian pregnancy is that variety in which the cyst walls are at first formed by the preternaturally firm union of the fimbriated termination of the Fallopian tube with a part of the ovarian parietes. As the ovum and its cysts progressively enlarge, the infundibular end of the oviduct gets greatly hypertrophied, and the cyst walls become united to the surrounding abdominal viscera and tissues; by which means the sac is not only strengthened, but—as it were—is partly formed by the adjacent intestine, omentum, mesentery. &c. Thus it has doubtless happened that many of these cases have been described as examples of ventral fœtation, having their origin in the precipitation of the fœcundated ovum into the cavity of the abdomen. Some years ago, the possibility of abdominal gestation was disputed; and the progress of physiological and pathological science since those days has materially served to strengthen, if not entirely to confirm, the correctness of these doubts. The fact has now been established by ample testimony, as I have already remarked, that the unimpregnated ovule quits the Graafian follicle at certain definite periods, and passes into the Fallopian tube and uterus. In one or other of these parts it either perishes, or becomes fœcundated, if a fruitful intercourse occur. Whether this law admit of any exceptions is uncertain; but it is an important question whether the ovule may be impregnated before leaving the Graafian follicle, and consequently while it is still in the ovary? Could this point be decided in the affirmative, not only would one obstacle to the belief in ventral pregnancy be removed, but we should have no difficulty in determining that cases of ovarian

gestation might also occur. This would naturally follow from its being granted that the ovary was the seat of fœcundation, and the successful coitus the cause of the escape of the ovum from the follicle; for of course it is easy to see that under these circumstances by some accident the ovum might be retained in the gland and there developed. And until the year 1825 it was generally allowed that this might happen,-that the fætus might really be developed within the proper structure of the ovary, although the occurrence was thought to be by no means common; but M. Velpeau then began to doubt the truth of the alleged fact, and he brought forward four examples of supposed ovarian gestation, in all of which the tumour was found on careful dissection to be external to the proper coat of the ovary. Subsequent investigations have 'led many authors to endorse M. Velpeau's opinions; and Geoffroy St. Hilaire, Pouchet, Dr. Allen Thomson, Dr. Arthur Farre, and others have expressed their strong doubts as to the possibility of the occurrence of ovarian gestation. The fact is, that not only have cases of tubo-ovarian pregnancy been mistaken for, and described as true ovarian gestations, but ovarian cysts containing hair, teeth, &c., which arise quite independently of pregnancy, have also been erroneously regarded in the same way.

The tubal variety is much the most common of all the forms of extra-uterine pregnancy. This is just what would be expected, when it is remembered that the Fallopian tube is, to say the least, generally the seat of feecundation,—the part where the essential male and female elements come into contact. When the ovum becomes arrested and developed at some point of the oviduct between its expanded termination and the spot where it enters the uterine parietes, the walls of the tube get enormously dilated, and gradually become deve-

loped into an oval sac. As, however, these walls can only become expanded to a somewhat limited degree in most women, it usually happens that about the third or fourth month they rupture; and the patient very quickly dies from the copious hæmorrhage which takes place. The quantity of blood which may be poured into the cavity of the peritoneum, under these circumstances, is really immense; many cases being recorded where it is said to amount to eight and ten pints. Sometimes rupture of the tubal wall takes place at an earlier period than the third month; and Rokitansky states that he has known it do so a fortnight after conception. When the rupture occurs within the first few weeks of pregnancy the exact situation of the ovum can readily be made out; since the walls of the oviduct alone form the cyst containing the embryo, and they are generally found free from any adhesions to the neighbouring viscera.

It has been suggested by Dr. Kussmaul, of Heidelberg. that many of the recorded examples of tubal pregnancy have been so designated erroneously; they having, in truth, been instances of gestation occurring in the stunted rudimentary horn of the so-called uterus uni-The uterus unicornis with the rudimentary horn, is equally adapted for pregnancy, as the same variety without the horn. But when the rudimentary horn contains the fœtus, we then unfortunately havewhat does not otherwise occur-rupture of this part, expulsion of the embryo into the abdominal cavity, and fatal hæmorrhage or peritonitis. The fissure of the rudimentary horn is always found near the origin of the Fallopian tube; and in these cases the developed horn is found thickened, and having a deciduous lining. When gestation occurs in the simple unicorn uterus, there is neither difficulty nor danger; and many

women with this malformation have borne several children. Pregnancy has also been found to exist in the rudimentary horn, when there has been no canal of communication with the well-developed horn; but in these cases the seminal fluid has doubtless passed from the developed horn to the ovum discharged from the ovary in connexion with the rudimentary horn, and then the canal has become obliterated from changes occurring in the decidua.

The interstitial or tubo-uterine form probably constitutes the rarest variety of misplaced gestation. In it the ovum becomes developed in that particular portion of the canal of the tube which traverses the uterine parietes. Hence the cavity containing the embryo appears as if developed within the proper tissues of the uterus; and its parietes are indeed chiefly formed of the smooth muscular fibre, as in the ordinary gravid organ. As the walls of the sac undergo development, they acquire considerable thickness; and consequently are often able to bear such excessive distension, that the pregnancy may go on until the full period, or even considerably beyond it. In some of these cases of graviditas interstitialis it happens very remarkably that the placenta is found in the proper cavity of the uterus, although of course the fœtus is wholly out of it. One of the most interesting examples of this, out of the four or five which are recorded by Patuna, Hoffmeister, Dezeimeris, &c., occurred in the practice of a Mr. Hay, of Leeds; who considered the case to be unique, and communicated the particulars to Dr. William Hunter.* The chief points worthy of note are these :-

The wife of A. B., aged thirty-five, of a good habit of body, was seized, when two months advanced in her second gestation, with pains resembling

^{*} Medical Observations and Inquiries. By a Society of Physicians in London. Second Edition. Vol. III., p. 341. London, 1769.

colic; but at the end of two or three days they were subdued by simple remedies. The pains did not return until four months afterwards, when they became much more severe and diffused than before. The acuteness of the attack was alleviated, but the intense suffering was always reproduced by the foetal movements. At the close of the eighth, and again in the middle of the ninth months, there were false labour pains; and an examination per vaginam showed that the cervix uteri was harder and longer than Mr. Hay expected to find it at the stage of pregnancy to which the patient had attained. Near the end of the ninth month, a violent attack of vomiting set in, which lasted two days; and soon afterwards, the term of gestation being concluded, the movements of the child ceased, and the violent pain which had existed for nearly four months subsided. The breasts began to swell, and milk soon flowed from the nipples; complaint was made of an uncommon coldness in the abdomen; there were frequent attacks of spurious labour pains; there was a trifling sero-sanguineous discharge from the vagina; and the patient suffered much from violent sickness. In three months from the time that labour ought to have come on, death put an end to the misery. The post-mortem examination revealed the existence of old adhesions between the omentum, intestines, peritoneum, and a large peculiar sac, which occupied nearly the whole abdominal cavity. Besides a well-formed feetus, free from every mark of decomposition, the cyst-the walls of which were about one-eighth of an inch thick-contained some chocolate-coloured fluid and a little pas. The umbilical cord passed from the abdomen of the fœtus through a narrow aperture, into a cavity whose walls were from one-half to seven-eighths of an inch in thickness; which cavity was found to be that of the uterus, and to be of much smaller dimensions than the sac which contained the fœtus. The placenta was very large, and with the uterus weighed two and a half pounds avoirdupois. The Fallopian tube on the left side was very small; the place of that on the right was occupied by the beginning or orifice of the sac.

The foregoing history seems to me to be highly instructive in several points of view:—first, from the fœtus having been as well developed in its abnormal position as it would have been in a normal pregnancy; secondly, from the efforts which were spontaneously made to expel the child at the termination of the natural period of pregnancy; and thirdly, from the placenta being attached to the internal surface of the proper uterine cavity, instead of to the walls of the artificial sac. The fœtus seems certainly to have perished when it had completed the ordinary nine months of fœtal life; but some cases have been noticed where the child would appear to have continued to live and grow for a few weeks beyond the ordinary term of gestation.

3. Symptoms of Extra-Uterine Pregnancy.—
These are very much the same in all the varieties. Speaking generally, there is at first but little constitutional disturbance, or not more than is common in natural gestations; nor does the patient experience any marked local uneasiness so long as the part containing the embryo can accommodate itself to the foreign body. Indeed, in many recorded cases it is remarked that the women have enjoyed excellent health, or that they have been free from any unusual symptoms until the close of the seventh or eighth month; though certainly in others the most severe suffering has been complained of after the first few weeks.

In most cases the catamenia are suspended, though in many the flow appears regularly, and in some is even When there are indications of much uterine excitement, it is not uncommon for the patient to have attacks of flooding; on which occasions, as coagula and masses of fibrine are passed, erroneous suspicions may be entertained that abortion has taken place. The breasts enlarge and the areolæ darken, as in ordinary cases; sometimes there is morning sickness, but this is often absent, and is seldom very severe; the patient is more frequently annoyed with diarrhœa and troublesome tenesmus, as well as with irritability of the bladder; and if the gestation continue, the fœtal movements are felt at the usual period of quickening. The abdomen also becomes enlarged and tender to the touch, the increase in size being evidently one-sided; but in rare examples the enlargement is regular and symmetrical, and merely has a form differing from that of natural pregnancy. The irregular but severe attacks of pain which are experienced in the pelvis, as well as in the hypogastric and inguinal regions are very characteristic of this condition. Sometimes these attacks pass off in a

few minutes, but on other occasions they continue for hours, and induce great depression of both mind and body. The late Dr. Heim of Berlin has pointed out that during these paroxysms of pain the patient speaks in a so-called "characteristic" whining tone of voice; which, it is said, cannot be mistaken, when once it has been heard. Most observers, however, now regard this opinion in the light of a fallacy. On instituting a vaginal examination when the gestation has so far advanced that there is palpable abdominal enlargement, a pelvic tumour may perhaps be detected, in addition to the uterus; or an irregular portion of the fœtus can sometimes be felt occupying the recto-vaginal pouch. More commonly, however, the fætal tumour is out of the cavity of the pelvis; the os uteri is reached with some difficulty, owing to the uterus being drawn above the pelvic brim; the cervix is felt as in the unimpregnated state; and the cavity though somewhat enlarged is empty, as the use of the uterine sound will prove. It need scarcely be said that this instrument must be employed with very great caution, and only when the diagnosis is otherwise tolerably clear, or at all events when there are distinct indications that there is no normal pregnancy. The evidence derived from practising auscultation over the tumour is often unsatisfactory. If there be much pressure upon the aorta or iliac arteries, a loud and diffused blowing sound will be perceptible. The fœtal heart is not always to be detected even when the child is alive; but if heard, it is usually only audible over a limited space, at a much higher point in the abdomen than in healthy pregnancy advanced to the same period, and at uncertain times.

When an extra-uterine pregnancy terminates in rupture of the cyst, exceedingly grave phenomena ensue. The time at which the walls give way is liable to some

variation; but it undoubtedly very generally happens prior to the fourth or fifth month. The premonitory symptoms may be so slight as to pass unnoticed, or they may be well-marked. In the latter case, the most characteristic are-impairment of the health, languor and mental depression, prostration, nausea and vomiting, irritability of the bladder and rectum, abdominal pains, and sanguineous discharges from the uterus. the tubal form, laceration perhaps generally occurs suddenly without any warning, and while the patient is in the enjoyment of good health. But in any case, immediately after the rupture, most excruciating and sickening abdominal pains set in; which gradually increase in severity up to a certain point, and then suddenly and completely subside. The abdomen sinks, the tumour disappears, and a feeling is experienced as of something having given way; while the surface of the body quickly becomes cold and pale, the countenance also gets anxious, and the pulse is found to be very quick and contracted or feeble. In a very short time, cold clammy sweats break out, the poor victim expresses herself as being comfortable and free from pain, perhaps a few convulsive rigors occur, and death takes place from the internal hæmorrhage. Should the bleeding be less copious, the patient rallies after a time from the first shock, and for some hours hopes of recovery are entertained; but these happy dreams are soon dispelled, acute peritonitis sets in, and a fatal termination commonly occurs before the close of the third day. If under the judicious use of opium and other remedies the patient be enabled to resist the violence of the inflammatory symptoms, she may still perish at a rather later period from exhaustion; but this danger being likewise avoided, there is a chance that the product of gestation may become enclosed in a new

cyst, and that the woman may be restored to a certain degree of health.

Supposing the cyst to remain uninjured, and the gestation to advance more or less nearly to the close of the natural term, labour pains will come on; which efforts at parturition usually continue for three or four days, and then subside perhaps to return at uncertain intervals during the few succeeding months. Generally the fœtus dies either before or just after the completion of the ninth month; but instances are recorded where vitality seems to have been retained for as long a time as four, or even five months, after this period. With the cessation of the fœtal life, the walls of the cyst would seem slowly to undergo a process of degeneration; so that in a space of time varying from a few months to some years, suppuration occurs, followed by ulceration and perforation into the neighbouring viscera. Thus the fœtal debris ultimately gets discharged through the rectum, bladder, stomach, or abdominal parietes. Although this process of course endangers the mother's life, yet many women recover from it. Indeed Dr. Campbell mentions two cases where the patients each had the products of three extrauterine gestations in their abdomens at the same time; and in both individuals, all the decomposed structures were evacuated through the abdominal parietes, and each recovered. The following interesting case has been recorded by Dr. Galiay, in which extra-uterine pregnancy occurred twice in succession in the same patient, and terminated favourably on both occasions. The history, abbreviated from the report, is as follows:*-

^{*} Gazette Médicale de Paris. July 29, 1837.

A young woman, shortly after marriage, was laid up for several days in consequence of injuries which she received during a quarrel. She recovered without much inconvenience, and shortly afterwards found that she was pregnant. The pregnancy seemed to follow the usual course, until—at the proper time—symptoms of labour set in; but the pains went off without being followed by any result. Months passed away, during which she remained of great size; until, after a long interval, she was seized with acute -but intermitting pains in the abdomen, groins, and anus. After a considerable period—in 1829—a violent attack of pain came on, accompanied by a desire to evacuate the bowels; but she was unable to relieve herself. On examination, the bone of a fectus was found firmly impacted within the sphincter ani; which being removed, she passed a number of other bones, and then got well. Until 1834 she enjoyed good health, when she again became pregnant. After some interval as before, the fragments of another fectus were expelled per anum, without pain or constitutional disturbance; and it is noted that she soon regained her health, and was well when the case was reported.

The length of time that a fœtus and its envelopes may sometimes be retained as a foreign body within the organism of the mother, without producing serious mischief, is very remarkable. The following case is perhaps one of the most curious on record:—

Anna Mullern, of the village of Leinzell, near Gemund, in Suabia, died at the age of ninety-four, after she had lived a widow forty years. Six-and-forty years before her death she declared herself to be with child, and had all the usual tokens of pregnancy. At the end of her reckoning the waters came away, and she was taken with the pains of labour, which continued upon her seven weeks, and then subsided under the use of medicine. Some time after this she recovered perfect health, except only that her belly continued swelled, and that now and then, upon any exercise, she felt a little pain in the lower part of it. After this she had two healthy children; but remained firmly persuaded that she was not delivered of what she first went with. On the 11th March, 1720, she died; and a large hard mass was then found in the abdomen enclosing a fœtus.*

A remarkable case, somewhat analogous to the foregoing, occurred in the practice of Dr. Montgomery:—

In the year 1828, a woman was admitted into the Cork-street Fever Hospital, with considerable enlargement of the abdomen. Her history was, that eight years previously she had been in labour two days, when the pains suddenly ceased; and the child instead of being born, rose up—as she expressed herself—into her stomach. After remaining in bad health for about two years, she again experienced the symptoms of pregnancy, and

^{*} The Philosophical Transactions Abridged. Vol VI. Part III., p. 212. London, 1733.

gave birth to a child which did not survive. The former child still remained in the cavity of the belly; and during its continuance there, she bore three children, the last of whom lived. Ultimately a fistulous opening formed near the umbilicus. This opening was enlarged, and the original child removed; it was in a state of wonderful preservation, measured twenty-two inches in length, and had attached to it about two feet of the umbilical cord.*

The particulars of a third noteworthy instance may be also mentioned:—

A woman, forty years of age, was suddenly seized with symptoms of internal strangulation, from which she sank. Dr. Christian, under whose care she was, discovered in the abdomen a large tumour, situated in the right iliac fossa and lumbar region. This tumour had first appeared some months after her marriage, twenty years before, at which time labour had come on at the sixth or seventh month, without any result; the movements of the foctus having suddenly ceased, and the labour itself having been arrested. After this period she had born eight children. The autopsy showed a tumour of the size of a large ostrich's egg, enveloped in a cyst with ossified walls, except at its superior part, and enclosing a fectus of six or seven months, as well preserved as if it had been artificially enclosed after the labour,—still having its umbilical cord fixed to the interior wall of the envelope which represented the placenta, and which was completely ossified. †

The last case that will be here quoted is one which shows that it is possible in instances of twin conception for one embryo to be properly developed in the uterus, while the other is lodged in one of the oviducts:—

On the 9th April, 1849, Dr. Craghead, of Danville, Virginia, was called to a negro woman belonging to a Mr. Conway. She was thirty-five years old, of strong constitution, and had previously enjoyed excellent health. She had one child at an early age; lived without a husband till she was nearly thirty, when she married, and shortly afterwards gave birth to her second child. Again she lived "sine marito," in which state she remained until the Christmas of 1848. Having menstruated early in January, 1849, and not since, she supposed herself pregnant. About the 1st of April, she complained of pains resembling those of colic; in consequence of which her master bled her, gave her an aperient, and occasionally a dose of laudanum. Dr. Craghead found the poor woman feverish, and complaining of considerable abdominal pain and soreness; while upon examination a tumour was discovered in the left iliac region, which was excessively tender. Bleeding was again resorted to, and calonel and opium administered; and on the 17th April she was so much better that she spoke of walking out. She took some cathartic pills at bed-time, and in the night awoke in pain, and made several ineffectual efforts to evacuate the bowels, remarking that she

^{*} Opus jam citat., p. 350. + Quoted by L'Union Médicale, Tome V., p. 334, Paris, 1851,—from The Philadelphiu Medical Examiner.

felt "as if there was something in her which ought to come away." A
few hours afterwards she was found in a state of collapse; with a cold
skin, scarcely perceptible pulse, a swollen abdomen, tenesmus, &c. About
the evening she rallied; and continued to improve slightly until towards
the close of the day of the 19th April, when labour pains set in, and in a
short time she aborted. The foctus was well-formed, five inches in length,
and evidently of rather more than three months' development. The mother
lived until the evening of the 21st, when she died rather suddenly. On
making a post-mortem examination, the whole abdominal cavity was found
filled with coagulated blood and serum, which had proceeded from the
rupture of some of the vessels of the left Fallopian tube. This tube was
greatly enlarged and converted into a membranous sac; which sac contained
a foctus of the same size as the one delivered per vias naturales. In other
words, it was well-formed, five and a half inches long, with a cord and placenta."

From the symptoms and histories which have now been detailed, it seems evident that the diagnosis in many cases of extra-uterine gestation is surrounded by difficulties; and it is therefore incumbent upon the practitioner not to form an opinion from the existence of any single feature in the history or examination, but rather from a careful analysis of all the symptoms presented. It has been from a neglect of this precaution that medical men have laid open the abdominal cavity to extract infants which have had no existence. A fertile and lively imagination has been allowed to paralyse the judgment. Even Dr. Ernest Ludwig Heim, who-in a practice extending over sixty yearshad had under his observation thirty-three cases of misplaced gestation, permitted and indeed persuaded a woman to submit to gastrotomy, where there was found neither a fœtus nor a tumour of any kind. This instance has been already quoted in Chapter III. Section 1; but it may be mentioned that the mistake seems to have been caused by Heim's attaching undue importance to the occurrence of severe intermitting pains, the cessation of the catamenia, the existence of a peculiar

^{*} The American Journal of the Medical Sciences. New Series. Vol. XIX., p. 114. Philadelphia, 1850.

moaning cry, and the patient's assertions that she daily felt the movements of the child.—The importance of making a correct diagnosis need not be insisted upon here. It is obvious that the position of a woman suffering from such a gestation as we are now considering is a most critical one; and if our treatment is to have any effect in retarding or preventing the rupture of the cyst, it will only be by its being practised at an early date.

4. TREATMENT OF EXTRA-UTERINE PREGNANCY.—
This part of our subject may be advantageously considered under three heads; viz., first, the precautions which are needed to prevent or retard rupture of the cyst; secondly, the measures which offer a chance of moderating the hæmorrhage after laceration; and thirdly, the steps to be pursued after the extinction of fœtal life.

The importance of preventing or even retarding laceration of the cyst cannot be over-estimated. When the cyst ruptures within the first few weeks of gestation, this accident is invariably fatal to the mother: but when it does so at a more advanced period, the event-though generally most disastrous-does not inevitably cause death. When therefore we find a patient presenting, in addition to the ordinary signs of pregnancy, such symptoms as have been already detailed, every precaution must be taken to prevent bodily fatigue, mental agitation, or the least extraneous irritation of the uterine organs. In other words, a pregnant woman who has occasional sharp attacks of abdominal pain, a sanguineous discharge from the vagina, a tumour in either iliac region, and a uterus so drawn up into the vagina that its mouth and cervix can only be reached with difficulty, should be kept free from excitement of every kind. The most rigid quiet and rest in the recumbent posture should be enjoined; sexual intercourse is to be strictly forbidden; all stimulants must, as a general rule, be disallowed; the diet should be light, and perhaps meagre; and the patient's apartment should be well-ventilated and not over-heated. Moreover, undue action of the abdominal muscles by vomiting, straining at stool, lifting heavy weights, &c., must be restrained; and immediately any pain is experienced, or there are any symptoms of the commencement of uterine contractions opium must be freely administered. This drug will be found invaluable if judiciously used; and perhaps, speaking generally, it will be found much more advantageous to give it by the rectum than by the mouth.

An interesting question here presents itself—viz., Can we in any way destroy the embryo at an early period, so that by preventing its further growth the integrity of the cyst may be maintained? According to the following case the proper answer seems to be in the affirmative:—

Madame Marie-Anne Ceccherini, of Pisa, twenty-nine years of age, and the mother of four children, presented in the third month of her fifth pregnancy, at the commencement of 1853, a tumour in the left iliac fossa. This was looked upon by Dr. Bachetti and Drs. Burci, Torri, and Bartolini, who were called in consultation, as the result of a tubal extra-uterine foetation. It was first attempted to arrest the development of the foctus, and consequently to prevent the fatal hemorrhage, by frictions of belladonna, and afterwards of the iodide of mercury; but recourse was finally had to electropuncture, with the view of destroying the foctus, this being accomplished by the implantation of two needles into the tumour, and then by directing into the latter an electro-magnetic current. Some pain was experienced by the patient, but it was surmised that the development of the foctus was arrested. Nor were the physicians disappointed in this respect, as the tumour rapidly diminished, and was reduced to the size of a pigeon's egg, after having been as large as a man's fist; the catamenia, which had not appeared for three months, returned; and the patient was ultimately dismissed as cured.*

^{*} L'Union Médicale. Tome XI., p. 168. Paris. 1857.

It may of course be asked whether the diagnosis in this instance was quite correct, and whether the tumour might not have been simply an ovarian one; but taking all the circumstances of the case into consideration, I think it may justly be said that most probably the opinion of Dr. Bachetti was quite right, and that the electro-puncture destroyed the fœtal life.

Unhappily it very often happens that the patient is seen by the physician for the first time when rupture of the cyst has taken place. She is found, under these circumstances, with an anxious exsanguined countenance, a hardly perceptible pulse, and rapidly sinking vital powers. Endeavours must then be immediately made to obviate the alarming tendency to death by syncope; and brandy ought to be freely given. The patient's head should also be laid rather lower than the trunk, and a full dose of solid opium exhibited; while pounded ice, or ice and salt, or cloths dipped in cold vinegar and water are to be placed over the abdomen. in order to moderate the bleeding if possible. Should these means fail, but little more can be done: though there are possibly to be found practitioners of sufficient boldness, who would give the patient such a desperate chance as might be afforded by opening the abdomen, and attempting to stop the bleeding by placing a ligature round the uterine end of the oviduct.

As regards the more fortunate class of cases where no laceration takes place, and the pregnancy goes on to the full term, the fœtal life generally becomes extinct soon after the cessation of the ineffectual labour pains. In these instances the fœtus may either remain as a foreign body in the maternal abdomen, and give rise to little or no inconvenience; or suppuration may take place within the cyst, its walls may become adherent to the surrounding viscera or parietes, and subse-

quently an opening may form through the latter, or ulceration may take place into the rectum, vagina, or When an opening is thus spontaneously made through the abdominal parietes, the aperture may often be most advantageously enlarged, to permit of the removal of the putrefied fætus. This proceeding was first successfully performed in the year 1550, again in 1590, and in many instances subsequently. Dr. Campbell well remarks,* that " when the suppurative process is established, or a breach is actually formed in the parietes of the abdomen, experience proves that the integuments may, with safety, be largely incised, or the pre-existing aperture freely dilated with success. Of thirty cases in which gastrotomy was performed, or the breach dilated, twenty-eight patients recovered. In twelve cases of gastrotomy performed after the suppurative process was well advanced, ten of the operations were successful. Of nine women operated on, however, during the existence of fœtal life, or soon after its extinction, the whole died. By these fifty-one operations only two children were preserved; and in one of these even, the details are too marvellous for belief." The fact here mentioned that all the women operated upon during the existence of fœtal life, or soon after its extinction, died, must not be forgotten; as it proves to my mind conclusively that gastrotomy should never be performed with the object of preserving the fœtus. Indeed it should not be resorted to until some time after the child's death, and when the system of the parent-though affected by the irritation set up by the fœtus-has been restored as nearly as possible to the condition of the non-pregnant state.

Whether the employment of a powerful caustic is

^{*} Opus jam citat., p. 150.

likely to be more successful than the use of the knife, or whether the abdomen may be safely opened at an earlier period by the former than by the latter, cannot now be decided. Perhaps, however, the following instructive case may serve to throw some light on this question. The report by Dr. Martin runs thus:—

The patient was the wife of a propriétaire, in one of the country districts of France. She was thirty-six years of age, of sound constitution, and had married when nineteen years old. One year afterwards she gave birth to a child; but she did not again become pregnant until after an interval of fifteen years, at the end of October, 1855. Towards the close of the December of the same year she was seized with violent pains, resembling those of labour, which were followed by true peritonitis, with intense fever. When this had been subdued, the abdomen, which before presented nothing remarkable, had so changed in form as to give rise to the supposition of extra-uterine gestation. Difference of opinion upon this head prevailed among those consulted; and there is no account of the progress of the case until the beginning of August, 1856, i.e., the termination of the normal period of pregnancy. Then pains, as if announcing approaching delivery, set in; but these were at first irregular, vague, and purposeless. On the 8th of August, however, they had become severe; and now on examining the uterus, no doubt could be entertained of the existence of extra-uterine pregnancy, and the urgency for interference became obvious. It was determined by the practitioners consulted in the case, in order to prevent effusion into the peritoneal cavity, to secure the formation of adhesions between the cyst and the walls of the abdomen by the employment of caustics for effecting the opening. The first application was made on the 11th of August (the mother had felt the child move the evening before, although no sounds were audible to the ear), the caustic paste being so directed as to produce an eschar about eighteen inches in length, running parallel to the linea alba, and being about three fingers' breadth to the left of the umbilicus, which was situa ed opposite to the middle of the eschar. The application of the paste—the composition of which is not stated—was repeated twice, and Canquoin's paste was also applied three times; the mortified parts being carefully removed by the bistoury after each cauterization, and the caustic again applied at the bottom of the wound. After the fifth application the cyst and the membranes were opened, not a drop of blood having been lost. On the 26th of August, i.e., fifteen days after the first application had been made, extraction was performed. Much liquor amnii, discoloured by meconium, had already flown away; and on pushing back the head, which projected through the artificial opening, the foctus was found to be free and floating as in its natural cavity. The cyst. which was a line and a half in thickness, was intimately united by solid adhesions to the internal wall of the abdomen, so that no fear existed of effusion into the peritoneum. The edges of the aperture were enlarged as much as possible by the removal of the débris of the eschar, without going beyond the limits of the cauterization, or giving rise to bleeding. As the child was dead and the head very large, an incision was made into the scalp, so that the frontal and parietal bones might be extracted. Pelvic version was then performed with great facility, and a fine viable child removed. About half an hour after severe hæmorrhage came on; and the placenta was found to be so adherent to the cyst as to require to be detached piecemeal. The bleeding then ceased, but the patient suffered from prolonged syncope, requiring the use of restoratives. Compresses soaked in vinegar and water were applied to the wound, and kept on by means of a towel, which exerted moderate compression on the abdomen. These were left on for three days, when the coagula of blood which had formed in the cyst were removed. During the first four days the patient felt very enfeebled, but no inflammation supervened; and at the end of a week she was comparatively well and comfortable. Every day injections were thrown into the wound, at first of an emollient, and afterwards of an astringent nature. Gentle laxatives were given from time to time, and the strength was kept up by good diet. At the end of the third week she was able to walk in her garden. The last report comes down to the 25th of September, when she was going on quite well, getting up every day. The wound was still an inch in length and six in depth, but in a very healthy state.*

Two instances have recently been recorded,† in which the operation of abdominal section has been successfully resorted to by Dr. Stutter, of Sydenham, and Mr. Adams, of the London Hospital, for the removal of dead extrauterine infants retained several weeks beyond the full period of pregnancy. In both of these cases the risk of using the knife appeared to be much less than the danger arising from the constitutional irritation which was set up by the fœtus. It is also deserving of notice that in these instances the after-birth was found firmly adherent; and consequently no attempts were made to extract this organ. The fact can be statistically proved that the removal of the placenta, unless this structure be found quite loose, adds very much to the danger of the operation.

Attempts have occasionally been made to extract the fœtus en masse by an incision through the walls of the vagina; and in a few apparently well-selected cases, success has been the result. Thus, of ten examples, the mother recovered in six, and in three the infant's life was also saved. Unless, however, some prominent

^{*} Revue Médicale, Tome II., p. 673. Paris, 1856. + Medical Times and Gazette, pp. 55 and 57. July 21, 1860.

part of the child's body can be distinctly traced through the wall of the vagina, and there are urgent reasons for interfering, Nature had much better be left to her own resources. Cazeaux relates that in a case where the head of the fœtus, from being wedged at the superior strait, could readily be felt through the posterior and upper part of the vaginal parietes, Professor P. Dubois-notwithstanding sharp opposition from several of his colleagues,-resolved upon freely incising the vaginal wall and cyst, so that he might apply the forceps and remove the child bodily. But when the incisions had been made, an intimate adhesion was discovered between the cyst walls and the fœtal head, which prevented further proceedings. The operation, however, was not without benefit, for in the course of a few days it was followed by the discharge of a putrid mass, comprising all the soft parts of the fœtus. Subsequently the detached bones of the skeleton were gradually extracted, the cystic walls slowly contracted, the opening healed by degrees, and at the end of two months the woman was completely cured. At the time of operating the patient had been pregnant twenty-two months.

CHAPTER VIII.

SUPERFŒTATION .- MISSED LABOUR.

- 1. Superfactation:—the possibility of its occurrence often denied:—many of the cases brought forward to support it, to be explained on other grounds:—three varieties of double uteri:—superfactation may occur where the uterus is not bilobed:—the uterine cavity is not closed until the ovum attains such a size as to force the decidua reflexa into close apposition with the decidua vera.—2. Missed labour:—definition:—its occurrence in domestic animals:—examples in the human subject.
- 1. Superfetation.—The usual definition of superfætation is, the occurrence of a new conception, while the cavity of the uterus is already occupied by an embryo. Hence, suppose a woman to be again impregnated when two months advanced in pregnancy, she will bear the first child mature when it has reached the ninth month of intra-uterine growth, and the second also mature two months later. The belief in the possibility of this occurrence is by no means universally entertained in the present day; although by many of the old writers little hesitation is felt on the subject. Thus Aristotle refers to the matter, remarking that-"it happens sometimes that an abortion takes place, and ten or twelve products of superfectation come away." Harvey cites an instance of it: in 1738, J. P. Gravel wrote a learned treatise De Superfætatione: Haller in his writings gives an account of all the cases, the histories of which he has been able to collect:*

^{*} Elementa Physiologia Corporis Humani, Tomus VIII. Lausanna,

while Brassavolus—some two centuries earlier—asserted that he had seen superfectation epidemic!

Without assenting to the views of the last-named author-who possibly was the Joe Miller of his dayit seems undeniable that a few curious and well-authenticated cases have happened, which can only be explained by allowing the truth of the occasional occurrence of superfectation: although many of the examples brought forward in support of this doctrine may be explained without having recourse to it. The instances usually adduced are such as these :- A woman has been delivered, at the natural termination of gestation, of a full-grown fœtus and a shrivelled ovum: or there has been a delivery at the same time of two children, one being more developed than the other: or, a negress has given birth to twins of different colours, as in a case mentioned by Dr. Moseley:* or lastly, a woman has borne a mature child, and three or four months

^{*} A negro woman brought forth two children at a birth, both of a size, one of which was a negro, the other a mulatto. On being interrogated as to the cause of their dissimilitude, she said she perfectly well knew the cause of it, which was, that a white man belonging to the estate came to her hut one morning before she was up, and she suffered his embraces almost instantly after her black husband had quitted her.—Treatise on Tropical Discusses, &c. Fourth Edition, p. 111. London, 1804.

But the most extraordinary case of monstrosity, involving the questions

But the most extraordinary case of monstrosity, involving the questions of superfectation and paternity, is said to have occurred at Alexandria, in Egypt. A Fellah woman was delivered of a dicephalous monster, of which one head was white, and apparently about the eighth month of uterine life, while the other was black, possessing in other respects the negro conformation, and this head was fully developed. The monster was born dead, and the mother died soon after her delivery. The change in the colour of the skin commenced at the neck of the black head, and was found, by an eminent physician, to be due to the existence of a colouring matter similar to that found in the skin of the negro race. The husband of the woman was a Fellah, whose skin was of a brownish colour. There were negro labourers in the port, but it could not be ascertained whether the woman had had intercourse with any of them. It is therefore impossible to say whether this was or was not a case of impregnation about the same time by two men of different races. —L'Union Médicale. Paris, Août 5, 1848. Quoted from Dr. Taylor's Medical Jurisprudence, Fourth Edition, p. 547. London, 1852.

afterwards a second fully developed and healthy child. Now, with regard to the first and second class of cases, it seems certain that they may have been, and indeed usually were merely ordinary twin pregnancies; in the first instance, one ovum having been blighted but retained; in the second case one feetus having been better nourished than the other. But this view fails to explain all the instances of the second class, as the following history—related by Dr. T. B. Taylor—seems to prove:—

A negress about thirty-five years old, was delivered of twins, in May, 1848; one a mulatto, the other a negro child. She had been married many years to a negro—a slave on the same plantation as herself—and had had several children by him. Her menstrual discharge had occurred for several months previous to her pregnancy at the full of the moon. She felt herself pregnant by her customary signs, about the middle of the month; and to confirm her suspicions, at the next period the menses did not appear. About three weeks from the time she first felt that she had conceived, and one week after her menses had failed to appear at the proper period, she had sexual intercourse once with a white man. At birth, the mulatto child bore marks of being at least three weeks younger than the negro; thus corroborating the woman's opinion, as to the time between the two conditions.*

The third class of cases must also be explained on the supposition of a twin pregnancy; two ova having been impregnated at nearly the same time by different men.—But with regard to those instances where a woman gives birth to a mature child, and three or four months afterwards to a second—the uterus not being double—no explanation but that of superfectation can be given. Professor Eisenmann, of Strasbourg, relates the history of a woman who was delivered of a second child 140 days after the birth of the first, both having been mature: she subsequently bore many other children, and after her death the uterus was proved to be single.—Dr. Maton has recorded the case of an Italian

^{*} American Journal of the Medical Sciences. New Series. Vol. XVII., p. 549. Philadelphia, April, 1849.

lady who was delivered on the 12th November, 1807, of a male child, which "had every appearance of health at the time of his birth," though he lived nine days only. On the 2nd February, 1808—not quite three calendar months afterwards—this lady gave birth to another male infant, completely formed and apparently in good health; and who lived for three months, when he died of measles.*—Dr. Tyler Smith states that he recently saw the following example:—

A young married lady, pregnant for the first time, miscarried at the end of the fifth month; and some hours afterwards a small clot was discharged, enclosing a perfectly fresh and healthy ovum of about one month. There were no signs of a double uterus in this case: the patient had menstruated regularly during the time she had been pregnant, and was unwell three weeks before she aborted.†

With regard to some of the so-called cases of superfætation there can be no doubt that the uterus has been double or divided into two cornua; a condition which is normal in the lower classes of the mammalia. as well as in the human embryo during the early months. In these cases conception occurs first in one division and then in the other. There are three varieties of double uteri:-the uterine cavity may be divided into two parts by a distinct membranous septum, while there is only one orifice and one vagina; or the body of the uterus may consist of two perfectly distinct and separate parts, but uniting in a common aperture, in a single vagina; or there may be two distinct uteri, each with a separate mouth, and separate vagina. A remarkable case of superfectation with double uterusthe possibility of the occurrence of which has been also denied-has been recorded by Dr. Generali, and is

^{*} Medical Transactions, published by the College of Physicians in London, Vol. IV., p. 161. London, 1813. + Lancet. London. April 12, 1856.

quoted by Dr. Alexander Henry in his excellent essay on this subject.* The chief points are as follow:—

Gaetana Bovatti, of Modena, had had six difficult instrumental labours. In 1816 she was pregnant for the seventh time; and there was noticed a well-marked furrow along the median line of the uterus, which gave rise to the suspicion of a double pregnancy. On the 15th February, 1817, she was delivered of an apparently full-grown male child; the placenta came away naturally, but there was no lochial discharge. The abdomen was reduced in size on only one side, and fostal movements were felt on the other. This state continued until the 14th March, when she was delivered of a second male infant of equal development with the first. In 1822, she became pregnant for the last time, and was delivered of a female infant. In September, 1847, this woman died of apoplexy. The uterus, on examination, was found to be double; the neck was of the usual form, but the body was divided into two parts, each being furnished with a Fallopian tube.

Another decided case may be subjoined. It occurred in the practice of one of the pupils of the Maternité of Paris, and the history is as follows:—

A woman was on the point of labour in the fifth month of her seventh pregnancy: a continual flow of blood, three weeks before, caused her to forebode miscarriage. The labour proceeded slowly, the head of the fœtus passed the os uteri, but could only be extracted by aid of the fingers, and the infant was born dead and livid. The umbilical cord was broken at the moment of delivery. Madame Dejean was waiting impatiently for the return of the pains and the expulsion of the placenta, when, all at once, a mass of blood, partly fluid and partly coagulated, issued forth, and brought with it an embryo, supposed to be in its third month, manifesting signs of life. The former fœtus was eight inches and a half in length, the latter only three and a half; the superfectation was evident. Madame Dejean ascertained, by examination, that the vagina and utero-vaginal orifice were single, as well as the cervix uteri, but that there existed two cervico-uterine orifices, each corresponding with a distinct uterus. These two orifices were perfectly distinct and open, one on the right, the other on the left side; they were of a different size. The birth of the second infant was almost immediately followed by the expulsion of the placenta belonging to the first; the other came away an hour afterwards; one was four inches in diameter, the other three; both were nearly circular, and the cord was attached to their centre. It is easy to suppose that a second impregnation may have taken place two months after the first, inasmuch as the body alone of the uterus is occupied in the first half of pregnancy; and it is quite evident that the miscarriage was occasioned by the considerable distension of the two uteri, of which one only had been distended in previous pregnancies. †

^{*} The London Journal of Medicine, Vol. I., p. 1105. 1849. † A Practical Treatise on the Diseases of the Uterus and its Appendages. By Madame Boivin and Prof. Dugès. Translated by G. O. Heming. Note, p. 20. London, 1834.

One more example may be referred to. The facts are recorded by Tiedemann, and the chief points run thus:—

A young woman, during her labour, was visited by two physicians, both of whom examined her. One stated that she was not pregnant, and that the os tince was firm and closed: while the other asserted that the os was open and the head already engaged in it. This difference of opinion caused a discussion, which led to a further and more careful examination, when it was found that there were two vaginae and a double uterus.

The question still remains to be answered,—Is there any positive physical obstacle to the occurrence of superfectation where the uterus is not double or bilobed? It seems certain that there is not; or at all events not until after the termination of the third month of pregnancy. The opposite view has chiefly been maintained by those who have been unacquainted with the true structure of the decidua. It is now, I believe, generally accepted as proved that the mucous plug of pregnancy is similar to the mucus found in the cervix in the unimpregnated non-menstruating uterus; through which plug the active spermatozoa must make their way in ordinary focundation, and which therefore can be no ob-Then the observations which have been already stacle. made on the structure and growth of the gravid uterus have shown that the uterus does not become closed until the ovum attains such a size as to force the decidua reflexa into close and firm apposition with the decidua vera; so that until this happens-about the third month -there is a sufficiently free communication between the ovary and the vagina, or in other words between the ova and the semen. As Dr. J. Matthews Duncan remarks. this explanation will account for all the authentic cases of superfectation.* For if we suppose in an instance of

^{*} Monthly Journal of Medical Sciences, Vol. XVI., p. 331. Edinburgh, 1853.

this kind, that the first child is born prematurely, but within the limits of viability, we thus gain two months; and if impregnation may take place between two and three months after conception, we have thus four or five months of interval accounted for between the births of successive viable infants.

2. Missed Labour.—More uncommon and extraordinary perhaps than either extra-uterine pregnancy or
superfectation is the abnormal condition now to be
mentioned. When, from some cause which has not
hitherto been explained, parturition does not come on
at the proper period, but the mature feetus dies and
remains included in the uterine cavity, without directly
destroying the mother, we have an example of what is
termed missed labour. This curious phenomenon is of
very rare occurrence in the human subject, for I am
only acquainted with the records of some eighteen or
twenty indubitable examples of it;* but it seems to be

^{*} In addition to some examples to be presently mentioned, the reader may be referred to the following:—Morgagni alludes to one case from Nebelins, in his work De Sedibus et Causis Morborum: Epistola XLVIII., art. 41. Edit. 2nda, Tomus 2ndus, p. 209. Patavii, 1765.—In Lowthorp's Abridgment of the Philosophical Transactions, Fifth Edition, Vol. III., p. 223, London, 1749, is a case where some of the tissues of the fœtus were voided by the anus years after conception. So many bones, indeed, came away that "verybody thought that there must have been three fœtuses buried in the womb all that time."—Dr. Dan. Schulz reports the case of a foctus retained in the uterus for nine years. The history is to be found in the Commentarii de Rebus in Scientia Naturali et Medicina Gestis, Vol. XVI., p. 399. Lipsiæ, 1770.—Gahn has collected the histories of many strange cases in his dissertation De Partu Serotino, pp. 12 to 16. Upsaliæ, 1770. Many of the supposed examples of missed labour, however, are really instances of extra-uterine pregnancy.—Voigtel speaks of an embryo remaining forty years in the womb, in his Handbuch der Pathologischen Anatomie. Band III., p. 518. Halle, 1805.—In Schmidt's Jahrbucher, Nov. 9, 1848, Dr. Vondorfer relates the case of a woman, forty-nine years old, with whom the pains of labour came on, and ceased after continuing for some days. At the end of eleven years the patient died from symptoms of purulent infection; and at the autopsy the remains of the putrefied fœtus, with its numerous bones, were found in the uterus.—

much more frequently met with in cows, mares, and other domestic animals. In these cases the uterus remains perfectly passive at the completion of the full term of gestation; and all attempts to excite contractions by ergot, galvanism, artificial dilatation of the os uteri, &c., seem to fail. The womb indeed becomes a mere sac like the cyst formed around an extra-uterine fœtus; and its anterior wall may ulcerate so as to permit of the passage of the decomposed fœtal bones and tissues into the peritoneal cavity, or into the bladder.

Dr, Oldham has met with one case which deserves to be well known:*-

The subject of this history was a pregnant woman aged forty-one, who expected to be confined in June, 1845; at which time a gush of blood from the uterus took place, with some pain, but without any other sign of labour. The breasts became distended with milk. Ergot of rye, galvanism, and some attempts at artificial dilatation were in vain had recourse to, in order to excite the paralysed uterus. The focus decomposed, and a great many of its bones were removed through the os uteri. The patient died three months after she had missed her labour; and a preparation of the uterus was shown at one of the meetings of the Pathological Society. By this specimen it was seen that the uterus was contracted, and the anterior wall of its body almost entirely absorbed. The remainder of the foctal bones, closely packed into an ovoid mass, were found in a cyst; which was bounded in front by the abdominal walls and urinary bladder; above, by omentum and small intestine, held together by false membrane; and behind and below by the posterior wall of the uterus, the cervix, and the os. The bladder was also thinning at one part, as though some of the foctal bones would have soon passed through it.

A more extraordinary instance occurred some years ago in Occognan, Virginia, and has been reported by Dr. M. L. Weems:*—

* Proceedings of the Pathological Society, Vol. I., p. 130. London, 1846. Also the Guy's Hospital Reports. Second Series. Vol V., p. 105. London, 1847.

4The American Journal of the Medical Sciences, Vol. XVIII., p. 257. Philadelphia, 1836.

Dr. Rae Menzies records an instance in the Glasgow Medical Journal, Vol. I., p. 129, 1853.—And lastly, Dr. Montgomery met with one instance, which he has narrated in the second edition of his classical work on The Signs of Pregnancy, p. 589. London, 1856.
* Proceedings of the Pathological Society, Vol. I., p. 130. London,

A mulatto, about twenty-five years old, the mother of three or four children, having completed the ninth month of her pregnancy, was taken in labour in the spring of 1827. Severe pains continued for two or three days, and then ceased; leaving her undelivered. From this time she continued, regularly, about every four weeks, to experience a return of the pains; which would generally last for two days, and then leave her as before. This state of things continued until June, 1828, when an empiric determined to open the uterus by an incision through the abdomen. On performing this operation, the uterus was found to contain the remains of a fectus in a half dissolved state, many of its bones being detached and bare: a large proportion of the soft parts had previously putrefied, and come away by the vagina. On removing the remains of the fectus, the internal surface of the uterus, for several inches around the os uteri, was found lined by a crust of osseous matter; which formed a smooth and perfectly continuous surface, except at the os uteri, where there was an opening sufficiently large to admit the finger. The crust was about half a line thick, possessed considerable strength, and adhered firmly to the uterus; from which it was with difficulty removed in small flakes. The uterus showed no disposition to contract; but the weman did well for ten days, when—after an error in diet—she was seized with peritonitis and died. No post mortem examination was made.

The foregoing case is particularly interesting; for though Morgagni, Baillie, and others have related instances in which the substance of the unimpregnated uterus has been converted into bone, yet I know of only one other example of such a change occurring during gestation. This instance is recorded by Dr. John Caldwell,* and is remarkable because not only was the greater part of the uterus ossified, but the fœtus itself had also undergone the same change. It is true that Dr. R. B. Cheston+ has given the history of a curious case in which the fætus was retained in the mother's abdomen, inclosed in an osseous sac, for fifty-two years after the expiration of the usual period of gestation; but it seems probable that in this instance the uterus ruptured during labour, and that the bony covering was subsequently formed around the child as it lay in the abdominal cavity.

* The Edinburgh Medical and Surgical Journal, Vol. II., p. 22.

⁺ Medico-Chirurgical Transactions, Vol. V., p. 104. London, 1814.— The preparation is in the Museum of the Royal College of Surgeons of England.

CHAPTER IX.

THE DISEASES WHICH MAY CO-EXIST WITH PREG-NANCY, AND THEIR RECIPROCAL INFLUENCE.

- 1. The state of pregnancy not always a happy one: the fears of the recently married girl :- the anxieties of the poor .- 2. The influence of mental disorders :- melancholia the most frequent form :- the consequences of pregnancy occurring in a woman already insane .-3. Paralytic affections do not hinder conception :- disease of the brain has no effect on the progress of labour :- the amount of influence which the three nervous centres exert upon the uterus during parturition .- 4. Pregnancy seldom of benefit to epileptics .- 5. Chores in connexion with pregnancy .- 6. The necessity for caution in recommending marriage for young hysterical women :- the influence of hysteria on pregnancy and delivery .- 7. The occurrence of tetanus after abortion .- 8. The effect of pregnancy on the progress of phthisis :- the effect of pulmonary consumption in hindering conception .-9. The effect of pneumonia on the course of gestation :- the fatality of this disease to pregnant women .- 10. The heart normally in a state of hypertrophy during pregnancy.—Sympathetic or nervous throbbings of the aorta.-11. Carcinoma of the labia and cervix uteri .- 12. The treatment of syphilis during pregnancy .- 13. The epidemic and infectious maladies which may complicate pregnancy .- 14. General observations on the therapeutics of pregnancy :- the influence of bloodletting :-cathartics and purgatives :- diaphoretics :- narcotics and sedatives :- counter-irritation :- tonics and stimulants, &c.
- 1. The state of pregnancy, though a happy one for the great majority of women, is not so for all. In the delicate, recently married girl, the general constitutional uneasiness which this condition induces, together with the novelty of her position, tends not a little to foster and increase the vague fears which are naturally entertained as to the pains and perils of parturition; fears, which have not unfrequently been seen to embitter almost

the whole period of gestation. So also, the prudent mother maintaining a family on limited means, experiences no small amount of solicitude as to the manner in which another child is to be provided for; this inquietude perhaps attaining an importance which only those can thoroughly sympathize with who know what it is to feel the res angusta domi. And then-not to mention the unmarried girl, whose pregnancy only serves to reveal her dishonour-there are those who, having grownnp sons and daughters, and having been unfruitful for some few years, become unexpectedly pregnant just perhaps as they were looking for "the change of life;" and who, strange to say, really feel greatly ashamed of their condition. If after a time the sentiment of humiliation be conquered and allowed to pass away, it is often only that it may be replaced by an exaggerated remembrance of past suffering, and a firm conviction that the trial which awaits them will end fatally; or perhaps the melancholy feeling takes the form of a fixed, everpresent idea, that the offspring will be malformed and hideous. Supposing that to these mental disturbances, physical suffering-e.g., that arising from dyspepsiabe superadded, the effect upon the patient's constitution can be pictured without much difficulty. Indeed, under these circumstances, sensitive ladies have sometimes so foolishly tortured themselves, that at the termination of their condition by parturition, their protracted vexation and pain has culminated in an attack of puerperal mania. If it be allowed, as it fortunately must be, that matters very seldom proceed to this extremity, yet it is undeniable that they very generally place the pregnant woman in a most unfavourable position for withstanding the ill effects of any morbid processes to which her system may become exposed; and that they always modify these processes in a marked degree.

2. Granting that these remarks are correct, it will excite no astonishment to find that mental disorders, either slight or grave, not very uncommonly demand the cautious attention of the physician during the progress of gestation: women who have any predisposition to insanity being especially susceptible to its attacks, either during pregnancy or immediately after delivery. In mild cases, the disease merely impresses a peculiar character on the patient's actions and physiognomy, without depriving her of the power of self-control; whereas in the more severe instances there are the ordinary well-marked symptoms of disordered intellect. It should be remembered, however, that the difference between these two classes of cases is usually only one of degree; the affection being the same in both.

Multipara and women beyond the age of twenty-five are probably more liable to attacks of insanity during pregnancy, than primiparous young females. An hereditary tendency, former attacks of mental alienation. constitutional weakness, excessive irritability of the uterine organs, prolonged mental excitement, and sudden fright are among the chief predisposing causes. Although the reason of its being so cannot be satisfactorily defined, yet there is little doubt but that this distressing malady is more common in France than in Great Britain; while in both countries the cases of insanity arising during pregnancy are much smaller in number than those which occur after delivery. Single women seem to suffer more frequently than the married : shame, neglect of friends, and perhaps the cruelty of the seducer being no sedatives to nervous irritability and excitement. It does not follow because a woman is attacked with temporary insanity during one pregnancy, that she will therefore necessarily suffer in the same way in another; but there is certainly a fear that she may do so. Dr. Burrows, in his Commentaries on Insanity, asserts that in some women insanity occurs contemporaneously with conception, and returns with every impregnation. Some become insane at various periods of gestation; others at the time of quickening only. The character of the derangement during pregnancy is almost always that of genuine insanity, not the delirium of the puerperal state. The same strange and inexplicable anomalies have, however, been sometimes observed in the insanity of pregnancy, as have been found to occur in the mania which follows delivery. Thus, it has been noticed that women have lost their reason for a time when carrying male children, whereas they have continued quite healthy when pregnant with females; just as Esquirol has observed, that some females have puerperal mania after giving birth to a male infant, whereas they have remained exempt from this malady after confinement with a daughter. So also in other instances, delirium has manifested itself only after every second labour; while in a third class, the disease has set in during the third or fifth month of each period of lactation without any discoverable exciting cause.

Of the various forms of insanity, melancholia is that which most frequently afflicts the pregnant woman. The symptoms are in no way modified by the condition of the generative organs; and hence they need not be described in these pages. The diagnosis between extreme mental dejection and true melancholia is often sufficiently difficult to test the sagacity of the physician. One simple mode of distinguishing between the two has been pointed out by Dr. L. V. Marcé,* which merits attention, and it is this:—That the tendency to

^{*} Traité de la Folie des Femmes Enceintes, des Nouvelles Accouchées, et des Nourrices, p. 42. Paris, 1858.

despondency, and all the resulting modifications of character and intelligence which are met with at the commencement of pregnancy, becomes less and less marked after the third month of gestation, and especially as the time of labour draws nigh; whereas in examples of mental derangement exactly the reverse occurs. Thus, putting aside those cases where conception seems to give, as it were, the signal for intellectual derangement, it is found that insanity seldom begins till after the third month, and commonly does not do so till after the sixth; while in general, moreover, the patient does not in any way improve during the continuance of gestation.

When insanity comes on during pregnancy without any special cause, and when there is no strong hereditary predisposition or powerful moral influence to maintain the diseased action, amelioration of all the symptoms very often occurs spontaneously a few days, or even hours, after delivery; this amendment being followed by complete recovery within a variable period of time. Why, in one instance, parturition should cure mental derangement, whereas in another it may appear as the cause of acute mania, is a problem difficult to solve. The fact, however, being as stated, it follows that during the attack active medical treatment should not be resorted to; but the physician should content himself with seeing that the functions of the stomach, liver, kidneys, skin, &c., are properly performed, that the patient takes a due amount of nourishment, and that she has sleep at night. Tonics, gentle aperients, sedatives and narcotics, moderate daily exercise in the open air, isolation or the presence and conversation of kind friends as may be specially indicated, are all useful agents. One point must, however, be specially remembered, or the most frightful consequences may

ensue; viz., that inasmuch as the morbid state almost always gives rise to the greatest irritability and despondency during the whole progress of the disease, so these afflicted patients require the most constant care to prevent them from attempting self-destruction. They seem, moreover, to be peculiarly liable to be affected with sudden uncontrollable impulses to commit suicide; in this respect differing from the majority of melancholics who generally destroy themselves, or try to do so, after long and careful premeditation, and after displaying the greatest cunning in their preparations for eluding suspicion.-When delivery has safely taken place, the infant should on no account be left alone in the mother's charge, until it is quite certain that a favourable and permanent change has taken place; though it is quite proper at short intervals and under surveillance to trust her with the child-not to suckle it, save in exceptional cases-in order to arouse a new and healthy train of feelings. The expression "permanent change" is used advisedly, for the disease sometimes recurs. As a case in point it may be mentioned that in 1841 a woman was discharged from St. Luke's Hospital apparently cured; but experiencing a fright soon afterwards, the mind again became affected, and in one of the paroxysms she destroyed both her infant and herself. And then, supposing the patient to be so fortunate as to be cured, she should be carefully forewarned of the risk-even if it be but small-of another pregnancy: for it may not unreasonably be anticipated that the cause recurring, the effect will follow. Any way, however, as Esquirol naïvely remarks-" On prévient les accès, en évitant la grossesse."

In certain instances it unfortunately happens that delivery exerts no beneficial influence on the progress of the insanity, but seems rather to aggravate the symptoms. Thus, a woman was admitted into the private asylum at Bethnal-green, who had been attacked with melancholia immediately after quickening. She had a strong desire to destroy herself and her three children. The disease continued unrelieved during the remaining term of pregnancy; and became worse after delivery. In a second example at the same institution the cerebral affection manifested itself in strangeness of conduct a month before parturition; perfect incoherence and great depression persisting after this event. Yet cases of this class are not always to be regarded as hopeless: for cures have sometimes been effected after the lapse of several months. But they teach us the important fact that in no case of mania combined with pregnancy is it advisable to prematurely terminate the latter in order to relieve the former. It has happened more than once that when insanity has occurred during the state of gestation, abortion has been induced as a means of cure; and, as far as I can learn, the results have been most deplorable. On the contrary, by adopting a simple expectant mode of treatment the lives of both mother and infant will be unendangered; and hopes may be entertained that the mental powers of the patient will be ultimately restored.

So far we have been considering the influence of pregnancy as an exciting cause of mental derangement; but another proposition may likewise be discussed with some advantage. What, then, are the consequences which flow from pregnancy occurring in a woman already insane? Does it lead to the cure or aggravation of the mental disorder? If we seek for replies to these questions in the writings of those physicians who have given especial attention to the subject of lunacy, we shall obtain only directly contrary opinions; and we shall certainly find many guided by the results which

have followed in only a few cases, confirming the vulgar opinion that pregnancy cures insanity. But the practitioners who have had the largest experience, men who have not only seen but who have observed, and whose remarks are universally received with the greatest respect, take a much more cautious view of this question. Thus Esquirol, in recapitulating the facts taught him by unwearied and careful observation, says-" Pregnancy, parturition, and lactation are means by which Nature has sometimes cured insanity; but I regard these cures as rare. I have often seen pregnancy and labour effect no change in the demented, with the exception of rendering them more calm. I have also known a lady, who, during five consecutive pregnancies, became deranged, and was cured each time by the accouchement. But in spite of this example and of many others often quoted, and notwithstanding the opinions of many physicians, I regard as exceptional cases the cures of insanity by marriage, pregnancy, and parturition; so often have I seen the madness persist in spite of, and even be aggravated by, these means. It is only necessary to visit the Salpêtrière to see more than a hundred insane women, though they each have gone through the process of marriage, pregnancy, and delivery."*-More recent authors, especially Marcé and Morel, entertain similar views; and it seems to me that reasoning from analogy this opinion must be regarded as correct. have seen how very impressible the nervous system is rendered in most pregnant women, how the disposition often becomes altered, how the sympathetic disorders which are almost a part of the state of gestation depress the vital powers, and what a shock the pains of labour

^{*} Des Maladies Mentales, sous les rapports médical, hygiénique, et médico-légal. Tome II., p. 392. Paris, 1838.

with the hæmorrhage which accompanies delivery may inflict upon the whole system. Are we warranted, then, in inferring that these actions can impress a salutary change on a pre-existing morbid state? I believe not; but rather on the contrary, that as a general rule, which the exceptions serve to prove, they are calculated to aggravate the mental disorder. Facts alone, however, can satisfactorily decide this question, and to them appeal is made.—From hospital practice or from the writings of different authors, Dr. Marcé has collected the histories of nineteen cases of pregnancy occurring in insane women.* The great importance of the question under consideration justifies a brief analysis of these :-

In one case, a woman thirty-two years of age, was safely delivered at the end of her first pregnancy. After her second labour she was attacked with mania, which continued one month. Three weeks before her third accouchement, she again became insane, and has since remained so. A fourth pregnancy with a labour remarkable for a complete absence of any

suffering did not ameliorate her condition.

The second patient was thirty-five years old, and had had two attacks of insanity in two years; the first arising without any appreciable cause, the second at the end of a confinement. She seems to have got well, but two years subsequently (in 1832) the disease reappeared in the form of melancholia with stupor; being occasioned by the fear of cholera. While so afflicted she became pregnant. Gestation, delivery, and lactation for two months only aggravated the disease. At the end of two years some symptoms of dementia had shown themselves, when a new pregnancy occurred, followed by delivery at the full term. The dementia became more marked, and the patient remained incurable at Charenton.

In a third case pregnancy and labour occurred during a third attack of mania. The woman, twenty-five years old, became demented without any

remission in the progress of the disease.

In a fourth instance, a young woman became pregnant while in the Salpetrière, suffering from attacks of stupor alternately with excitement. She was delivered during a period of stupor after a labour of six hours; the pains having been so slight that she scarcely uttered a cry even during the last quarter of an hour. The mental disease was in no way modified.

The fifth example is curious from the fact that the patient became insane when she was nineteen years of age, and that in spite of her malady continuing she was married at twenty-one. She had three children without her condition being improved; and she is now an inmate of the Salpetrière. The age of the sixth patient was thirty-nine. She suffered from partial

^{*} Opus jam citat., pp. 81 to 119.

delirium with hallucinations; and in no way improved after pregnancy and a natural labour. The seventh case was of a similar description.

Then there are five examples which can only be alluded to briefly, since the facts are not reported in detail. One was delivered in the reylum of St. Jacques of Nantes, without her mental disease being at all modified: two are now in the Salpetrière under the care of M. Mitivié, one being twenty-eight years of age, the other thirty-five, and both incurable, though they were delivered in the hospital some years ago: in one case pregnancy occurred after the persistence of hallucinations for two years, but no improvement followed the birth of a fine healthy boy: and the fifth patient was under the care of M. Morel, who states that the morbid condition of the mind was modified neither by the state of pregnancy nor by parturition.

And finally there are five instances in which a cure took place at a longer or shorter interval after delivery: there is one in which there was such considerable amelioration of the symptoms at the end of the third month of pregnancy, that she was then discharged from the asylum, and unfortunately lost sight of: and there is another recorded by M. Weill, in which reason was regained during two successive pregnancies, though the

patient afterwards became an incurable lunatic.

The foregoing review cannot, it seems to me, do otherwise than lead us to agree with Dr. Marcé in opposing the practice of those who advise pregnancy in the cases of insane women, when ordinary remedies fail to effect any good. It is the more necessary to be positive upon this point, because popular prejudice is in favour of the view that pregnancy is not only a cure for insanity, but for all chronic nervous disorders; and the physician, without taking the initiative, may, nevertheless, by his silence, seem to authorise the practice which flows from the prevalence of this opinion. The error has arisen through the circumstance daily taught by common experience, that women who marry, and by childbearing carry out the law of Nature, usually enjoy better and more even health, than such as lead a life of celibacy, or who marry and remain unfruitful. But because marriage may serve to maintain the balance of physical and mental vigour, it by no means follows that it will therefore cure or even mitigate disease. While writing these remarks I have in my recollection the case of a young lady of fortune, who was of such an excitable disposition, and suffered so frequently from

attacks of aggravated hysteria that at times she positively required control. After consulting almost every medical man of note in the metropolis for nervous disorders of one kind or another, her relations were strongly advised to try the effect of matrimony. Money, it is always allowed, can procure everything; and in this instance it certainly enabled its possessor to secure a husband. After the marriage ceremony "the happy pair" lived together for nearly two years, when "incompatibility of temper" necessitated a separation. The lady was the mother of one child, which she seemed to dislike the sight of, and which was cruelly neglected; and she was five or six months advanced in pregnancy with a second infant when I saw her. Though unfit for any decent society, liable to attacks of irritability and despondency sad to witness, and in such a state generally that no one would say she was of sound mind, yet she could scarcely be called insane, in the ordinary acceptation of the term; but it seemed to me at the time that by whatever expression her condition was then designated. confirmed dementia could be the only ultimate result .-A few months since I attended a case in consultation with Mr. Francis Odling, where there was a history somewhat similar to the foregoing as respects disease, marriage, and separation; though happily the symptoms were less severe, the offspring was much better cared for, and there appeared a probability of a more favourable termination.-But the point I wish to insist upon is, that in neither of these examples did marriage do ought but aggravate the morbid symptoms; while it materially increased the difficulty of managing the patients in a social point of view, and subjected the poor little helpless children to unnatural neglect in infancy, with the miserable prospect of inheriting the mental weakness of the parents.

When fœcundation takes place in insane women, the period of gestation is generally passed through in a favourable manner, and is not marked by any special peculiarities. In only two of the cases which have been referred to did the act of quickening give rise to any fresh delusions. One of the patients declared that she had a tapeworm in her stomach, whose movements she felt; while the other woman believed that she had a serpent in her abdomen, which at the time of her delivery would spring upon the surrounding persons and destroy them. The histories of these and similar cases also show that the labours of insane women are, generally speaking, remarkably easy; the pain and suffering being so slight that no indication of uneasiness even may be given. This circumstance makes it necessary that such women should be narrowly watched as the time of delivery draws nigh; since otherwise the lives of both mother and infant may be sacrificed for want of due attention. Again, too, let me urge that the suicidal tendency of the parent be not forgotten. The woman is often impelled by an almost irresistible desire to destroy both herself and child; and though she may for a time be able to withstand this influence, yet unless closely watched day and night, her power of resistance will fail her at some opportune moment, and the loss of two lives will be the penalty for the neglect of the attendants.

3. The paralytic affections dependent upon disease of the brain and medulla oblongata need not act so as to prevent pregnancy. I have myself seen two instances of long-standing hemiplegia, in which uterogestation for a time proceeded as under ordinary circumstances; and it may be believed that such cases are far from uncommon. Hemiplegia, involving the face,

tongue, and extremities, is the ordinary form of cerebral paralysis; the disease rarely assuming the condition of paraplegia, which depends, as a rule, on some injury of the spinal cord or its membranes. When paraplegia arises during the latter months of gestation, the paralysis may be due to the pressure of the gravid uterus upon the obturator nerve and the sacral plexus.

The fact is well known that paralysis is sometimes a functional disorder; or, in other words, no organic change exists in any of the nervous structures which can be recognised. Intemperance, cold, excessive venery, &c., seem occasionally to produce this form; and very rarely it is probable that pregnancy has a similar effect. At all events, we know that during the term of uterogestation it is not very uncommon to find patients affected with amaurosis, or with deafness: which conditions persist only until after delivery. A few remarkable instances are recorded in which more marked paralysis arises. Thus, Dr. Lever mentions the case of a lady who was attacked with hemiplegia in four successive pregnancies. The symptoms always came on very soon after the commencement of gestation; they were modified by treatment, but not removed; and were only cured by delivery .- Three years ago I was consulted by a lady whose lower extremities became gradually paralysed rather before the sixth month of gestation, so that when seen one month afterwards she could neither stand nor walk, and was exceedingly debilitated; medicines and nourishing diet improved the health, but not the paralysis. A week prior to labour she suffered from retention of urine, and from an inability to retain the contents of the bowel. Five weeks after labour she had entirely recovered, and has since remained well; chiefly I believe in consequence of the great care which was taken to keep up the general health, and her adherence to my urgent advice that she should lead a life of celibacy. In this instance it appeared to me that the paralytic affection was not dependent upon the pressure of the gravid uterus, since it commenced at too early a period for this cause to act so powerfully. It rather seemed to be owing to "an irritation springing from various sensitive nerves;" and to be allied to that form of paraplegia which is sometimes due to disease of the virgin uterus. Lisfranc, Nonat, Romberg, and others have related several cases following disease of the womb, which were only cured by the relief of this disorder. An instance reported by Dr. Brown-Séquard may be quoted as an example :*-In 1855, a young lady consulted this eminent physiologist for what she called an extreme weakness; but which was really a paraplegia, almost complete at each menstrual period. There was no diminution of any kind of sensibility; no paralysis of the bladder or rectum; no symptom of hysteria. Dysmenorrhœa, bearing-down pains, and a very sensitive, congested, and anteflexed condition of the uterus alone existed. In a few days after the use of a bandage to support the womb, a great amelioration was evident; and in less than two weeks the paralysis had entirely ceased. It had lasted six months; and had been treated in vain by strychnia, galvanism, shower baths, steel, and other tonics.

The connexion and reciprocal influence which exists between the brain and uterus is often so well-marked, that it might be thought disease of the former would have an injurious influence on the progress of parturition. Daily experience teaches us that mental impressions will suspend the pains of labour, and sometimes will

^{*} Lancet, p. 415. London, April 28, 1860.

suppress the menstrual flow; and conversely, irritation of the ovarian or uterine nerves, during pregnancy or the process of delivery, will excite convulsions, apoplexy, or mania. But on examining the question more closely, it will be found that our speculations on this head are without foundation. The uterus resembles the heart in more than one respect. Thus, it is a large hollow muscle; its contractions are mainly regulated by the ganglionic system of nerves; and its action is rhythmic, three periods being observable, viz., one of contraction, one of relaxation, and one of repose. The amount of influence which these three nervous centres exert upon the uterus during parturition is uncertain; some difference of opinion existing upon this, as on many other points connected with neural physiology. seems, however, quite clear that the influence of the cerebrum need not be taken into much account: for we find that uterine contractions occur just the same when all cerebral influences are withdrawn as when they are uninterfered with. The occurrence of labour in cases of hemiplegia, of complete paraplegia, as well as in the temporary unconsciousness produced by anæsthetics proves this sufficiently. That the spinal system furnishes the uterus with nerves is certain from the many reflex relations of this organ. To take only one instance, we find that powerful contractions may generally be induced by the excitement of the mammary nerves, as occurs when a child is placed at the breast. But it is probable that the largest supply of nervous force is derived from the ganglionic system; and this is shown by the process of parturition taking place when all spinal influence appears to be abrogated. Dr. Farre records the following interesting example of this fact: -"A woman was attacked with paraplegia in the eighth month of pregnancy. She had neither sensation nor motion in any part below the umbilicus. No reflex movements whatever could be produced by tickling the soles of the feet. The fæces passed involuntarily, and the urine was drawn off daily. About the ninth month, her medical attendant, when about to pass the catheter, found a full grown fœtus in the bed (dead). The uterus was contracted, and the placenta in the vagina. The woman was entirely ignorant of what had occurred. Scanzoni and Chaussier relate similar examples of birth taking place notwithstanding complete paralysis of the sensitive and motor functions of the lower half of the body. In Chaussier's case the pressure was occasioned by a hydatid cyst which involved the cord on a level with the first dorsal vertebra."* The influence of the sympathetic ganglia and nerves is further shown in the uterine contractions which are sometimes manifested after death; as when delivery spontaneously takes place some time subsequently to the cessation of the maternal life. Hence it seems probable that while the cerebro-spinal fibres maintain the relations of the uterus with other organs, the ganglionic system regulates the contractions of this viscus.

4. The hope has occasionally been entertained that pregnancy might exert a favourable influence upon patients liable to fits of epilepsy, if only by suspending the attacks during the continuance of gestation. Such expectations have very generally ended in disappointment. This result might be anticipated, if it were merely remembered that irritation of the female organs of generation sometimes alone suffices to excite this disease, so that not a few authors—as Sauvages, Prichard,

^{*} Cyclopædia of Anatomy and Physiology. Article, Uterus and its Appendages. Vol. V., p. 676. London, 1859.

and others—speak especially of the Epilepsia Uterina. M. Malgaigne even mentions a remarkable instance in which the first epileptic attack came on during pregnancy, and the woman continued ever afterwards a sufferer from frequent seizures: but the cases where gestation actually provokes this disease must be very few in number. Dr. Copland alludes to the history of a young lady, who was for a long period under his care on account of slight epileptic fits, connected with irregularity of the uterine functions and of the bowels. After marriage, she experienced a gradual amendment for some time; but her first labour was followed by a very severe attack of puerperal mania.

On the other hand, in studying fully the causes of epilepsy, it does seem as if celibacy actually predisposed some women to suffer from this disease; and hence, since the year 1691, when Lanzoni recorded a cure by marriage, not a few physicians and patients have hoped for a similar result from this remedy. Dr. Sieveking refers to one of his patients, a widow of thirty-eight, who stated that she had had fits from time immemorial; but had been freer from them since marriage and childbirth than formerly. Nevertheless, while allowing that marriage tends to relieve many disorders of the sexual functions in women, yet this author very judiciously remarks, that as it is certain "that the marital act itself may become an exciting cause of epilepsy, and as we know that the hereditary influence of the disease is great, we ought not to counsel epileptics to marry; as well on account of their partners, as on account of their offspring, unless the long time that has elapsed since the occurrence of a paroxysm, justifies a hope that the morbid taint is quiescent, if not extinct."*

^{*} On Epilepsy and Epileptiform Seizures, p. 113. London, 1858.

This advice is substantially the same as that given by Dr. Herpin; who remarks that he is acquainted with the histories of two young men and two women who married many years after they had been cured, while up to the date of his writing they had none of them had any reason to regret taking such a step.*

Supposing an epileptic to become pregnant, the question of course arises as to the power of medicine to afford relief. Unfortunately no special remedy can be recommended as likely to do much good; but undoubtedly a certain amount of benefit will accrue from making every endeavour to improve the patient's general health, and also from administering such agents as are calculated to give tone and firmness to the nervous system. Hence a simple but nutritious diet must be allowed, with plenty of milk, cream, and two or three raw eggs daily: intoxicating drinks of all kinds are, as a general rule, to be forbidden: the patient ought to take daily exercise in the open air, she should avoid late hours, and she must be warned of the consequences of exposing herself to anything calculated to produce mental excitement: and bark, quinine, zinc, or one or other of the mild preparations of steel should be prescribed. Recollecting that epileptics improve for a time under every new plan of treatment, we should so husband our resources as to be able to vary the remedies; and everything should be attempted which is likely to make the sufferer place confidence in her physician. Faith and hope will often accomplish very much when all the drugs in the pharmacopæia prove valueless, more especially in many of the diseases of the nervous system. Finally, it is not to be forgotten

^{*} Du Prognostic et du Traitement Curatif de l'Epilepsie, p. 523. Paris, 1852.

that the tendency to epilepsy is frequently handed down from parent to offspring; and hence a mother who suffers from attacks of this malady should not be permitted to increase her child's unavoidable predisposition to the same by suckling it. A strong, healthy wet-nurse is, if possible, to be procured, and the infant must be reared with the greatest attention to its physical and mental health.

5. Of the nervous affections which may complicate pregnancy, chorea is also one which demands some attention. The chief features of this disease consist—to use the definition of Romberg—in combined movements of one or more groups of muscles, independent of cerebral influence, increasing in violence when predetermined movements are attempted, and more or less interfering with the latter.

Chorea is rare after puberty, being most commonly seen in patients between six or eight, and fifteen years of age. But occasionally it affects adult women, and is not very unfrequently found in connexion with pregnancy. It is remarkable that in these cases the sufferers have rarely been troubled with the disease in early life: it seldom occurs before the second month of gestation, and still more infrequently after the fourth: it sometimes can be relieved by the employment of suitable remedies during pregnancy, but often is very obstinate, and resists all treatment until after delivery: primiparous women appear to be more liable to it than the multiparous, for of twenty recorded examples the patient was in her first pregnancy in no less than seventeen: and it is quite exceptional for it to set in after delivery. In the majority of instances both sides of the body are affected, though sometimes the disease is unilateral. So also the upper extremities are attacked alone in some women; and the same is the case with the lower limbs, though Romberg makes the contrary assertion. But undoubtedly, as a general rule, the chorea of pregnant females is bi-lateral. "The intensity of the movements," says Romberg, "is very marked, and they are often complicated with convulsions of an epileptic character. Many complain of a sense of numbness in the affected parts. The brain is almost invariably affected; and this is shown by headache, vertigo, a wild expression of the features, rolling eyes, unconnected speech, loss of memory, and great irritability."*

The symptoms and progress of this disorder when co-existent with pregnancy are often very remarkable: and as the best method of fixing them upon the memory of the reader, three or four of the most interesting cases recorded will here be quoted.—The first which may be mentioned is that of a Jewess, who had suffered from chorea as a girl, and been successfully treated by Peter Frank. Fifteen years afterwards she married, and became pregnant; when an attack of chorea set in, more intense than Frank had ever witnessed during a practice of fifty years. The spasmodic movements continued day and night; and although there was perfect consciousness, yet the behaviour was most violent. The integuments were covered with boils and gangrenous spots; none of the remedies employed had any effect; but a miscarriage took place at the fifth month, and health was restored at the same time.+

Dr. Ingleby, in a course of Clinical Lectures, alludes to the histories of five examples of chorea arising during

^{*} A Manual of the Nervous Diseases of Man. Translated and Edited for the Sydenham Society, by E. H. Sieveking, M.D., p. 63. London, 1853

⁺ Frank's (Josephus) Praxeos Medica universa pracepta. Tomus I., p. 348. Lipsia, 1841.

pregnancy, which were all fatal.* One of this gentleman's cases was that of a female in the last month of gestation, who for six weeks had been suffering from a violent headache. Soon after a venesection convulsions of the facial muscles supervened, which were communicated to the left arm, and which-after a second bleeding -spread over the greater part of the body. On the evening of the fifth day, the disease attained an alarming height; the patient spoke loud, rapidly, and almost unceasingly, though her consciousness was unimpaired: and the movements were so violent and universal, that it was necessary to hold her down by force. As, at the same time, parturient pains set in, it was thought advisable to rupture the membranes; upon which a dead child was born. The spasmodic symptoms, however, were in no way diminished; and after a short sleep, produced by opium, the movements became so much aggravated, that six people were scarcely able to restrain her. Twenty-four hours later death ensued, with all the symptoms of extreme exhaustion.

Dr. Lever has reported the following interesting example of this affection, commencing at an early period of pregnancy.† The chief points in the medical history need only be quoted, and they are these:—

Mrs. — was married at the age of nineteen. She was of a cheerful and lively disposition, had enjoyed good health, and the uterine functions had been performed with regularity and without pain. A few months before marriage or just afterwards—it cannot be said which, owing to Dr. Lever's style being more poetical than distinct—she suffered once or twice from hysteric attacks; but conception took place "ere the torch of Hymen was extinguished." For the first two months the symptoms of pregnancy presented no special peculiarity; being chiefly mechanical, with gastric irritability. But at the commencement of the third month, a perceptible alteration took place in her manner; she became irritable and peevish, convulsive movements were observed about the muscles of the face, and these were followed in a week by a tossing of the head to and fro. The

^{*} Lancet, p. 783. London, February 22, 1840. † Guy's Hospital Reports. Second Series. Vol. V., p. 4. London, 1847.

right arm next became convulsed, then the left, and afterwards the left and right leg. During the progress of the case, her mode of speech became altered; her sentences were short; she hesitated before replying to a question, and when an answer was given she seemed to shoot it out. In spite of purgatives in large doses, zinc, iron, arsenic, digitalis, colchicum, nux vomica, bark, quinine, musk, ammonia, and the shower bath, no improvement took place; and she continued in the same condition until the close of gestation, when her memory seemed weakened, and fears were entertained lest she should become imbecile. At the proper period labour set in, and after an easy time she was delivered of a live girl. When the uterine pains were present, the convulsive movements ceased; but in the intervals they were most distressing. Delivery was succeeded by a long and quiet sleep: the patient was better on waking; the symptoms gradually subsided; and at the end of a month no trace of chorea was left. The supply of milk was copious, and she weaned her infant at the seventh month. The child at the time of the report was seventeen years old, of a slender figure, quick and irritable in temper, and impatient of rebuke. At the age of twelve she had a slight attack of chorea, which was induced by fright; but it was soon removed, and at the time of removal the catamenia appeared, and afterwards continued regular.

Dr. Robert Lee gives an account of a young woman, in the sixth month of her second pregnancy, who died of chorea on the 29th August, 1840, in St. George's Hospital. The symptoms were at first slight, and were apparently produced by a fright. The convulsive movements, however, became so violent, that it was found necessary to put on a strait-waistcoat, and fix her down to the bed. Forty-seven hours before death the contents of the uterus were expelled. On examining the body after death, the brain and spinal cord were perfectly healthy. There were some small vegetations on the mitral valve. The right kidney and ureter were wanting: the supra-renal capsule was present, uterus was in a natural state. The corpus luteum was unusually small, and the coats of the Graafian vesicle could scarcely be seen within the yellow matter. Dr. Lee asks the pertinent question,-Whether, when the treatment failed to relieve the symptoms, and they became violent and dangerous, would it have been advisable to induce premature labour ?*

^{*} Clinical Midwifery. Second Edition, p. 112. London, 1848.

And lastly, Dr. J. Matthews Duncan relates* two cases of partial chorea, which need not be further mentioned than to say that they are interesting for these reasons:—the lower limbs were the parts affected with the involuntary movements; the attacks were periodical in their character, the movements occurring in one case only in the evening and early part of the night, and in the other being troublesome merely in the night, unless the patient sat in one position for a long time; the treatment consisted chiefly in the administration of steel and opiates; and both patients got well after a few weeks of medical care, and at least two months before delivery.

The treatment of chorea is not of necessity to be materially modified because of the state of gestation. Hence as in the St. Vitus' dance of childhood, the chief indications are to regulate the bowels, to subdue irritation, and to strengthen the system. When purgatives are required, they must, as will by and by appear, be well-chosen; drastic cathartics, preparations of aloes, and large doses of senna being inadmissible. Opiates prove beneficial in many, if not in all cases: and remembering that as during sleep the irregular actions of the muscles usually cease, so we may often advantageously give the sufferer the great benefit of tranquil repose by the aid of chloroform. The tonics which do most good are of the ferruginous kind; and few preparations of this class are better than the ammoniocitrate of iron, or the fer réduit or pulvis ferri of the Dublin Pharmacopæia, or the citrate of iron and quinine. Of course with these measures it will be necessary that the patient be allowed a good nourishing diet; that

^{*} The Edinburgh Medical and Surgical Journal, Vol. LXXXI., p. 35. Edinburgh, 1854.

she be advised to take moderate exercise in the open air, if her condition permit; and that mental excitement be guarded against as much as possible. With regard to shower or douche baths it may be said, that it will usually be better to try and do without them; though ordinary tepid baths, administered so as to give no shock to the system, will often be of advantage. And then, supposing all our efforts fail to give relief, I entertain no doubt but that abortion or premature labour should be induced; taking care, however, not to wait so long before resorting to the necessary proceedings, that the patient's strength is exhausted.

6. An author may well congratulate himself when he can with justice assume that such a disorder as hysteria needs no description at his hands. For who can accurately paint the features of this protean malady? What writer, however ready with his pen, can detail a tithe of the symptoms presented by those afflicted with this disease? Every example of it is a study to the most experienced practitioner. Not only are no two cases alike, but each case presents ever-varying phenomena; for hysterical women—as Sydenham admirably says—observe no mean in anything, and are constant only to inconstancy.

Taking it for granted, then, that most of my readers are acquainted with the principal forms and varieties of this disease, and referring those less enlightened to the wards of our hospitals and to special books upon the subject, I shall here confine myself—as is my province—to the consideration simply of two questions.—The first is, as to the propriety of recommending marriage for young hysterical females? Since the days of Hippocrates innumerable writers have replied to this in the affirmative; and with certain reservations the answer

must be allowed to be correct. Hysteria originates during the period of sexual maturity. A morbid sexual state, either physical or mental, often-to say the least-lies at the root of it; for the disease is very seldom witnessed in young women whose uterine functions are perfectly normal, or in such as are happily married.* Its victims are young single girls suffering from chlorosis, ovaritis, amenorrhœa, leucorrhœa, or dysmenorrhœa: women who are united to men that they detest, though they probably have to hide their unhappiness from the world: or females who become widows during the prime of life. If, then, we allow that a happy marriage is the grand remedy for very many hysterical diseases, we must take care only to recommend this step when all bodily disease has been removed, and when there appears to be something more than a mere chance that it will benefit the particular case before us. In other words it may be said that general principles must not be relied upon too implicitly in the consideration of this subject. The remarks of Mandeville on the responsibility of physicians advising marriage as a remedy are worthy of notice, though they are not altogether in accordance with the views here advocated. He says, + "But I never prescribe an uncertain Remedy, that may prove worse than the Disease; for not to speak of the many Inconveniences the advising it often puts People to, (præterquam quod januam aperit nequitiæ), in the first place it may fail, and then there are two People made unhappy instead of one; Secondly, it may but half cure

^{*} We know that Hindoo women are married prior to the appearance of the catamenia; and it is said, though I know not with how much truth, that hysteria is almost unknown among them.

+ A Treatise on the Hypochondriack and Hysterick Diseases. Third Edition, p. 307. London, 1730.

the Woman, who, lingring under the Remainder of her Disease, may have half a dozen children, that shall all inherit it. A Physician has a publick Trust reposed in him: His Prescriptions by assisting some, ought never to prejudice others."

The second point which remains to be spoken of is as to the influence of hysteria on pregnancy and delivery. On this head I have not much information to impart. But it seems that when a woman suffers from aggravated hysteria during the period of gestation, there is some reason to fear that the parturient state may be followed by an attack of puerperal mania. Thus the following observation is made by Dr. Burrows :- "I have seen two cases where hysterical symptoms attended during pregnancy, and the patients almost immediately on delivery became insane." And again he remarks .-"Puerperal delirium consequent on labour is sometimes predicated, though not absolutely developed, during gestation. If while pregnant there attend frequent hysteric affections, preternatural susceptibility, unaccountable exuberance or depression of spirits, morbid aptitude to exaggerate every trivial occurrence and attach to it great importance, suspicion, irritability, or febrile excitation, or, what is still more indicative, a soporous state, with a very quick pulse, then the supervention of delirium on labour may be dreaded."* Dr. Gooch relates the history of a lady unusually subject to the common forms of hysteria, who was delivered at the seventh month of a dead child. A few days afterwards she was seized with violent pain in the left side of the head and face, which subsided under the use of hemlock; but she continued to suffer from flatulence, a quick

^{*} Commentaries on the Causes, Forms, Symptoms, and Treatment, Moral and Medical, of Insanity, pp. 364 and 366. London, 1828.

weak pulse, and much mental depression. At length she made an unsuccessful attempt to cut her throat; and afterwards was very violent. Soon she became cataleptic, and lost all consciousness. She had three paroxysms of cataleptic symptoms; and the delirium then assumed the ordinary form of melancholia. Three months from her delivery she completely recovered.*

7. Women have suffered from tetanus setting in after abortion, just as they have done so after the termination of natural labour, or after lesions of the unimpregnated uterus. Fortunately, this fatal disease is very rare under either of these circumstances. Thus, in a table of 171 published examples of tetanus collected by Dr. Laurie, there is only one case in which it was due to abortion, and one in which retained placents is said to have been the source; while in fifty-two instances found by the same gentleman in the Records of the Glasgow Infirmary, there is not one report of its occurrence in obstetrical practice. Other cases are, however, to be discovered scattered through the various British and foreign periodicals. In an essay on puerperal tetanus, Dr. Simpson has brought together the histories of seven undoubted instances of this disorder following early miscarriage, in all of which death occurred: as well as sixteen similar examples of this affection succeeding to parturition at or near the full time, thirteen of which ended fatally. † When tetanus has supervened upon abortion it seems to have generally happened after the sudden cessation of the discharge

^{*} An Account of some of the most Important Diseases peculiar

Women, p. 112. Second Edition. London. 1831.

† Glasgow Medical Journal, Vol. I., p. 339. Glasgow, 1854.

‡ Edinburgh Monthly Journal of Medical Science, p. 97. Februar F.
1854. Republished in The Obstetric Memoirs and Contributions, Vol. II. p. 49. Edinburgh, 1856.

from the use of astringents or of the plug; this cessation having been followed by exposure to cold. So when it takes place after delivery, the abrupt suppression of the lochia from the influence of cold or damp seems to have been the starting-point of the disease.

The instance of tetanus following a retained placenta above referred to occurred in the practice of Dr. Storer, and presents some instructive features. The chief facts which are to be gleaned from the report* are these:—

On the 20th September, 1841, Mrs. C., aged thirty-eight, was delivered of her third child after a natural labour. The umbilical cord was large, and so feeble, that on passing the finger along it to the attachment in the placenta, it separated at its origin. The placenta, which was very firm, was situated high up on the anterior face of the uterus; and it adhered throughout its whole extent with such force to that organ, that Dr. Storer could not detach it in the slightest degree. Having made such efforts as were thought proper without any success, the patient was left. On the 22nd September, the bowels were freely opened by a dose of castor-oil and an enema; but there was no appearance of the placenta being detached. On the 23rd the lochia were quite offensive, and vaginal injections of chamomile tea were ordered. But little change took place in the appearance of the patient on the 24th and 25th; except that repeated chills were noticed on the former of these days, which were followed by a slight secretion of milk, and upon that and the following day the child was nursed. On the morning of the 26th, the commencement of the sixth day, Dr. S. removed a small fragment of the placenta, which had been thrown into the vagina, and feeling more beyond it which could not be seized, a dose of ergot was given. After a second dose two masses of placenta similar to the first passed away. On the 27th the pulse for the first time since delivery was upwards of 100, small and wiry :- the patient complained of pain in the head, considerable stiffness of the jaws, and a difficulty in swallowing. These symptoms rapidly increased, and at eleven o'clock p.m., the tip of the tongue could scarcely be protruded between the teeth. The muscles of the neck and jaws had become much more painful, the respiration was laborious, and at irregular intervals there were tetanic spasms. On the morning of the 28th it was found that she had passed a very restless night; the muscles of the jaw were so rigid that the mouth could not be opened in the slightest degree; the merest touch appeared to distress her, and to hasten the spasmodic action which was every few minutes present; the head was thrown backward upon the pillow, and so firmly contracted were the muscles of the neck, that when her hand was placed at the back of her occiput, the whole body was brought forward, the neck not being flexed in the slightest degree; when the spasms were present, the suffering appeared to be extreme; and

^{*} American Journal of the Medical Sciences. Vol. XXIX., p. 97. Philadelphia, 1842.

the paroxysms increased in frequency and severity until about midnight of this, the eighth day, when she sank exhausted by opisthotonos.—No post mortem examination was allowed to be made. It may be observed that there were no symptoms of metro-peritonitis.

The treatment of obstetrical tetanus has to be conducted according to the same rules which influence the practitioner in attempting to cure this affection when it arises from other causes. I shall therefore only make one remark on this head. The disease essentially consists in an exalted reflex excitability of the spinal system; and our efforts must be directed towards diminishing this state by keeping the patient in the most perfect quietude, and by the exhibition of antispasmodics and narcotics. Hence chloroform, in consequence of its direct sedative action upon the reflex nervous system and upon muscular contractility, is invaluable. This agent is not recommended as a last resource. It has been employed successfully in cases of traumatic tetanus; and though, of course, it has often failed, yet perhaps—as Dr. Simpson suggests some of the failures have arisen from the patient not having been kept sufficiently deeply and continuously under its influence. The effects of this drug may have to be sustained even for many days; which with care may be done without danger. In an apparently hopeless case of convulsions in an infant of only six weeks old, Dr. Simpson employed chloroform almost continuously for thirteen days; using in this time as much as one hundred ounces of the drug. The disease vielded; and a few months afterwards the little patient was a strong and healthy child .- Moreover, if the induction of anæsthesia fails to save life, it at least affords the blessing of relief from the most frightful suffering; and it is not possible to over-estimate the importance of assuaging the agony which the tetanic spasms give rise to. "I esteem it the office of a physician," says Lord Bacon, "not only to restore health, but to mitigate pain and dolors; and not only when such mitigation may conduce to recovery, but when it may serve to make a fair and easy passage: for it is no small felicity which Augustus Cæsar was wont to wish to himself, that same Euthanasia; and which was specially noted in the death of Antoninus Pius, whose death was after the fashion and semblance of a kindly and pleasant sleep.

.... But the physicians contrariwise do make a kind of scruple and religion to stay with the patient after the disease is deplored; whereas, in my judgment, they ought both to enquire the skill and to give the attendances for the facilitating and assuaging of the pains and agonies of death."*

8. It has been generally admitted until the last few years, that when pregnancy occurred in a phthisical patient the progress of the consumption was retarded; but that after delivery the organic lesion proceeded more rapidly, and death more speedily ensued. The theory has been this;—that as during pregnancy all the powers of the system are concentrated upon the uterus, so this organ prevents or retards disease in all other parts of the animal economy. This doctrine was advocated by most authorities of note, until Dr. A. Grisolle published some observations showing that it is quite untenable.† This gentleman's essay is so elaborate, and his arguments appear so well-founded, that I am sure a brief analysis of his memoir will be useful.—Dr. Grisolle's views are based upon the

^{*} The Advancement of Learning. Book the Second. Spedding and Heath's collected edition of Bacon's Works. Vol. III., p. 375. London, 1857.

[†] Archives Générales de Médecine. Quatrième Série. Tome XXII., p. 41. Paris, 1850.

histories of twenty-seven cases of phthisis occurring during pregnancy. In twenty-four of these the organic disease began during utero-gestation, at a period more or less near its commencement; while in only three did the rational signs of tubercle exist prior to pregnancy, though the disease did not actually manifest itself until a later period. In none of these cases was the pulmonary affection retarded; on the contrary, it

made rap'd progress.

When we reflect on the profound influence which pulmonary tubercles exert on the constitution, as well as the uterine disorders which so generally supervene at an advanced period of the disease, we can readily understand why conception should rarely take place in phthisical women. In almost all the cases in which phthisis co-exists with pregnancy, it is found that the latter has occurred first, and that it is in a more or less advanced period of its course that pulmonary tubercles have suddenly manifested their presence. Thus there is no antagonism between pregnancy and phthisis: but gestation does not modify nor exert any tardative effect on the pulmonary lesion. The phenomena of the disorder are developed with the same regularity and constancy. Pregnancy does not increase the violence nor frequency of certain accidental symptoms of phthisis; for the dyspnæa is not more painful, there is no increased tendency to diarrhea, neither is hæmoptysis more frequent. But in all the cases the actual duration of the disease was shortened; for in all the disease terminated at from the eighth to the fifteenth month from the commencement of the symptoms, while its mean duration was only nine and a half months. These results then, that there is no essential difference in the symptoms between the phthisis of pregnant and non-pregnant women, and that pregnancy, instead of prolonging life, hastens the progress of the organic lesion, seem to be clearly established; and it is difficult to imagine with respect to the last fact-how the opposite hypothesis ever became current. The system weakened by loss of appetite, diminished power of assimilation, night sweats, diarrhoa, copious expectoration, and hectic fever, can hardly be thought to be in such a favourable position as to be better able to support two lives than one. But the history of medicine shows that not unfrequently when the plain common-sense truth stares us in the face, we prefer turning aside in order to advocate or establish a theory, the only charm of which is its improbability.

With respect to the second current opinion, that the puerperal state accelerates tuberculization, and consequently hastens death, it need only be said that in practice such is ascertained to be the exception, not the rule. Dr. Grisolle found that twelve women, some of whom at the time of delivery were in the second, but the majority in the third stage of phthisis, continued to struggle, on an average, for four months afterwards against the progress of the disease, and in all, the symptoms were those observed in ordinary cases. In ten other phthisical females who were only in the first, or at the commencement of the second stage, the progress of the disease after delivery was slow in three; there was a notable aggravation in two; while the general symptoms manifested a sensible amelioration in the other five. Hence, if we wish to draw any rule from these cases it must be,-that the organic disease is often mitigated after delivery, provided it has not reached an advanced stage.

But it may be asked, if neither pregnancy nor the puerperal state have that influence upon the progress of phthisis which many have attributed to them, what is the opposite state of matters; in other words, to what

extent does phthisis modify the course of pregnancy and the sequelæ of parturition? There can, it would seem, be little doubt but that in the majority of instances tuberculization does not materially influence the progress of pregnancy: for many cases have been carefully watched where the pulmonary disease had even reached its third stage, and yet gestation has proceeded uninterruptedly to the full term. Of course a pregnant woman suffering from any lowering chronic disease is less likely to carry her fœtus for nine months than one who is strong and healthy; but still the tendency to abortion and premature labour is less than might be expected, and is not greater in phthisis than in other chronic constitutional affections. In this respect there is a marked difference between chronic and acute diseases: for whereas, perhaps, in a large number of cases of phthisis co-existent with pregnancy, premature labour would only occur in one-fourth or one-fifth of the whole, in pneumonia it would probably do so in three-fourths, or even more. In the one case we have a disease coming on so gradually that the system may be said not to feel any shock: in the other, there is sudden and severe constitutional disturbance, more allied to that which results from a dangerous accident or a capital operation.

The only influence of pulmonary consumption on the process of parturition would appear to be that it shortens the duration of the suffering, and lessens the violence of the pains; so that the labour is seldom extended beyond four hours. The simple explanation of this circumstance is obviously that the relaxed and flabby tissues offer diminished resistance to the passage of the child. The lacteal secretion has generally been found to be freely established shortly after labour; but as suckling would be very injurious to a consumptive mother, and would probably produce both present and

future disastrous results in the infant, it has not usually been allowed beyond the first few days. When the mother has insisted upon nursing, the milk has either very much diminished in quantity, or has entirely ceased to be secreted within a period varying from one to four weeks; and lactation for this short time has materially aggravated the maternal disease, while the infants have also been great sufferers. Indeed, of all children, those born of a phthisical parent most imperatively demand that they should be reared by a vigorous and healthy wet-nurse; for they are often feeble and emaciated even at birth.

9. The question next arises as to the influence which an attack of pneumonia may exert upon the progress of gestation? The most common result undoubtedly is the termination of the pregnancy by the expulsion of the fœtus. This effect takes place possibly in three out of four cases. How can such a fact be explained? It cannot be owing to the violence of the cough, as some suppose, because women affected with severe acute bronchitis, or with asthma, do not abort. It is not probable that it is produced by the intensity of the fever or by the inflammation per se, because a similar result does not happen in nearly the same proportion of cases of encephalitis, pleurisy, hepatitis, or enteritis. Neither does it seem to be accounted for by the importance of the organ affected; since in pulmonary phthisis we have not a like effect. No doubt the suddenness as well as the severity of the attack may have a very unfavourable influence upon the state of pregnancy; but obviously, from the foregoing observations, not sufficient alone to account for the circumstance under consideration. The true explanation is I believe to be found in the condition of the blood in acute inflammation

of the lungs. Now it is well known that in this disease there is either a great deficiency of chloride of sodium in, or a total absence of this salt from, the urine; and Dr. Beale has well proved that such diminution or absence conclusively indicates that the circulating fluid contains less than the normal quantity. The two chief facts which may be adduced as favouring my view are these. First, that in the textures of the embryo, a large proportion of fixed chloride is present. Thus, Lehmann examined the femur of a six months' fœtus, and found 10.138 per cent, of chloride in the ash, while he could only obtain from that of adult bones 0.7 to 1.5 per cent. So also it is probable that there is a determination of chloride of sodium to the tissues of the gradually increasing uterus; but at all events the researches of Voigt show us that there is a considerable quantity of this salt in the liquor amnii, which salt diminishes as gestation advances. Secondly, Mulder and various observers have noticed a diminution of chloride of sodium in the blood in cases of cholera; and it so happens that this disease appears to give rise to premature expulsion of the fœtus just as often as pneumonia does. Dr. Bouchut has shown that in fiftytwo cases of cholera occurring in pregnant women, twenty-five aborted in consequence of the disease; while he infers that the same result would in all probability have taken place in a larger number had it not been prevented by the early death of the patients. Moreover, with a few exceptions, abortion took place only in those cases in which the disease lasted over twenty-four hours; when, consequently, the altered condition of the blood would be fully appreciated by the various tissues. The objectors to this hypothesis will possibly say that the absence of fixed chlorides from the urine occurs in many acute inflammatory diseases besides pneumonia.

But the answer to this assertion seems to be that in inflammation of other organs this diminution or absence is by no means the rule, as it is with inflammation of the lungs; while we also know that abortion does occur in all these cases, though it is most common in the latter disease.

It only remains to be noticed that pneumonia is much more fatal to pregnant than to non-pregnant women: that it is considerably more dangerous when it produces abortion than when it does not interrupt gestation: while when the morbid action sets in at a time near the natural period of labour, it has a most disastrous effect upon the fœtus, which is usually either born dead, or in so feeble a condition that it perishes a few hours after birth.

10. More than thirty years ago Dr. Larcher arrived at the conclusion that the heart is normally in a state of hypertrophy during gestation, although his views have only recently been fully published.* This gentleman's investigations were pursued at the Maternity Hospital of Paris: and were based upon the circumstance that in 130 post mortem examinations of women who had died mostly from puerperal fever there was not found a single exception to this rule. The walls of the left ventricle were increased by at least from a fourth to a third in thickness, while at the same time their texture was firmer and their colour brighter. The right ventricle and the auricles were found to have retained their normal thickness. Twenty years later Dr. Beau examined the question anew: while at his suggestion M. Ducrest, Interne of the Maternité, carefully noted the

^{*} Archives Générales de Médecine. 5mº Série. Tome XIII., pp. 291 -306. Paris, 1859.

heart's condition in 100 other women, and confirmed Dr. Larcher's statements.

Within certain limits this condition is of course compatible with the maintenance of perfect health: but it may also be received as the explanation of that predisposition to congestion of the different viscera which often marks the state of gestation. Probably, as a general rule the hypertrophy gradually but slowly disappears after parturition; though in exceptional instances it may be otherwise, and especially when pregnancy recurs frequently and at short intervals. There seems some reason to believe that this change is the cause of those permanent lesions in the organs of the circulation which are not unfrequently met with in women who have borne many children in the space of a few years, or while in a bad state of health. So also it is said that the bronchitis which is so common during pregnancy derives much of its character from the persistence of this condition of the heart. And again, it may account for the various forms of hæmorrhage that often occur in pregnancy; as epistaxis, hæmoptysis, and apoplexy.

Sympathetic or nervous throbbings of the aorta not unfrequently cause much annoyance in the early and middle periods of pregnancy. The throb has generally a jerking and abrupt character; it seems to occupy the whole line of the vessel, rather than to be circumscribed; and its maximum of intensity is often found about the umbilical region. In the advanced stages, palpitation combined with dyspnæa has generally a mechanical cause; that is to say, it depends upon the pressure of the gravid uterus upon the large vessels of the abdomen, and upon the diaphragm preventing its descent.

11. The fact has been established by the observations

of several physicians, that carcinoma of the lips and cervix of the uterus does not prevent conception. Even when the disease has reached the stage of ulceration, and the watery and sanguineous discharges are abundant, an ovule may become fertilized. Under the same circumstances it is also certain that the ovum may be gradually developed and retained in utero until the completion of the natural term of gestation; although not unfrequently abortion or premature expulsion of the fœtus does occur. When the pregnancy proceeds uninterruptedly nearly or quite to the full term, the labour is commonly found to be difficult and tedious, and invariably very hazardous to the mother; while the consequences to the child are often very disastrous. If the disease should form any serious obstacle to the passage of the infant, and especially if the difficulty be such as cannot be overcome by the cautious use of the knife or of obstetric instruments, rupture of the uterus is the common result. Moreover, supposing delivery to be safely accomplished, the process of parturition seems decidedly to give an impetus to the destructive tendency of the cancer, particularly by exciting inflammation and softening.

These remarks will be best proved by a short reference to certain statistics:—

From these it may be learnt that of one hundred and twenty cases of carcinoma treated by Dr. Lever, forty per cent. had aborted.—Of Puchelt's thirty cases of cancer and seven of cauliflower excrescence with pregnancy, five died undelivered, four of them with ruptured uterus. Of the thirty-two delivered naturally or by art, sixteen perished during or soon after labour; thirteen survived their accouchement; while of three the issue is nuknown. In these thirty-seven cases, only ten of the children were born alive; seventeen were still-born; five were undelivered; and of five no account of the viability of the infants is given.—Of twenty examples advanced to the full term of pregnancy, with four to the end of the seventh month, collected by Dr. Menzies, of Glasgow, four of the women died undelivered, and ten within the puerperal month; while of the ten that survived longer, labour occurred in one at the end of the seventh month, and in five disease implicated only a portion of the circumference of the os. In one of these the disease consisted merely of four or five small tubercles, and the subject of it recovered from three successive labours, in which she bore two

living and one dead child. In three of these twenty-four cases the cervix was lacerated; in one a large disc was detached from the lower part of the uterus during parturition, and the mother survived six months; in two the body of the uterus gave way, and the patients died soon after delivery; in another rupture produced death before delivery could be effected; while in one the woman died undelivered, from low peritonitis, seventeen months after the commencement of gestation, without the rigid os uteri having yielded to the feeble muscular contractions. From the twenty-four cases twenty-six children resulted; of whom eight were alive, eleven were stillborn, four were undelivered, and of three the fate is unknown.

The treatment of pregnancy when complicated with uterine cancer is surrounded with difficulties, so that it is almost impossible to lay down any very precise rules for the guidance of the obstetrician. Probably the favourite proceeding with most practitioners is the induction of abortion or premature labour: the former being had recourse to if the disease be in an advanced stage, or if it implicate the whole of the os uteri, while the latter is resorted to about the seventh and a-half month if the affection be less extensive. But I doubt very much the prudence of adopting this practice in the majority of instances. As Dr. Menzies remarks, -"there are serious objections to following this counsel in all cases. It will frequently be found that the cervix is so narrowed or entirely obliterated by the cancerous deposit, that the membranes cannot be reached without inflicting such laceration and contusion as may induce hæmorrhage or inflammation. If the disease is extensive, the contraction great, and pregnancy advanced to the seventh month, delivery must be accomplished with such difficulty and danger, as should cause us to hesitate in accelerating a crisis, whereby our patient may be deprived of two months at least of her existence. It is, moreover, a well-established fact that parturition accelerates the destructive action of the disease, while pregnancy appears to impede it; hence in cancer far advanced, where great loss of structure has rendered the os more patent, and the passage of the head comparatively easy, premature delivery would likewise hasten the fatal issue. I think, however, that in some cases where the scirrhus has not made much progress, Dr. Kiwisch's plan of inducing abortion, as modified by Dr. Tyler Smith, would afford us a means of prolonging life, further than would be attained by allowing the pregnancy to be matured." *

Supposing that the pregnancy has gone on until the full term, and that the natural efforts appear insufficient to accomplish delivery, assistance must be afforded at a somewhat early period to avoid the risk of rupture of the uterus, or of exhaustion from failure of the woman's already diminished vital powers. Under these circumstances turning has been performed in several instances; but in all, according to Dr. Menzies, with the loss of both mother and child. The application of the forceps has been recommended by many writers; but the use of this instrument is clearly inadmissible unless the os is dilated, the pelvis well-formed, and the deposit thin and elastic. Of course these are just the instances where sufficient space is afforded spontaneously, and hence where delivery can take place without any artificial aid. Craniotomy succeeds well for the mother in some carefully selected cases; but if the os uteri be rigid and contracted, from induration of its tissues, there is great danger of laceration occurring, even from drawing a much mutilated child through the diseased maternal passages. Moreover, many men may conscientiously object to sacrifice the existence of a healthy infant for the mere chance of giving a few weeks of suffering to a woman afflicted with a fatal disease.

^{*}A Case of Pregnancy complicated with Carcinoma of the Uterus, in which Gestation was prolonged to the Seventeenth Month. By P. Rae Menzies, M.D., &c. The Glasgow Medical Journal, Vol. I., p. 138. Glasgow, 1854.

Hence it is a subject for congratulation that the life of the child can often be spared by means which do not materially, if at all, prove detrimental to the mother. This desirable end is to be attained by resorting to vaginal hysterotomy. After the necessary incisions have been made into the os and cervix uteri, we may either trust to the efforts of Nature to complete the labour, or we may apply the long forceps, or we may even turn and deliver the infant by the feet. When performing the operation of hysterotomy it is as well to remember that the safest plan is to make four incisions: viz., one obliquely and anteriorly on each side, and two obliquely and posteriorly. In this manner the surgou will avoid the risk of wounding the uterine arteries, which run tortuously upwards on the sides of the womb Should the carcinomatous infiltration be so extensive as entirely to prevent delivery per vias naturales, it only remains for the surgeon to extract the child, if alive, by the Cæsarean section. In one instance the infant was saved by this proceeding, and the mother lived for some short time after the operation, which, indeed, did not seem to accelerate her death.

12. The effect of syphilis upon the course of gestation has been so fully discussed in the chapter on abortion, that only a few words need now be added on the subject of treatment. On this head then it may be said positively that the use of appropriate remedies must not be postponed until after delivery. It is the disease which produces miscarriage and feetal death, the treatment being comparatively harmless. In the case of primary sores the inunction of small quantities of mercurial ointment, night and morning, or less frequently according to circumstances, until the mouth agently touched, will produce the most beneficial effects

while if gestation be not advanced beyond the end of the sixth mouth, the cure may safely be hastened by the simultaneous employment of the mercurial vapour bath. For the removal of secondary or constitutional syphilis I have great faith in the bichloride of mercury, in doses of one-sixteenth to one-eighth of a grain, thrice daily. The only inconvenience attached to the use of this remedy is the length of time for which it is necessary to persevere with it. Except in the advanced periods of pregnancy the mercurial vapour bath may also be advised in these instances.-One hint more may prove useful. The accoucheur has occasionally to attend a woman in labour who is suffering from primary ulcers on the genitals. To save the infant in its passage and himself in his manipulations from infection, he should touch each sore thoroughly with the solid nitrate of silver. For his own greater security also, I would advise him either to wear an oiled-silk glove, or to adopt my own practice, and paint the hand with a mixture of one part of collodion to two of castor-oil. By this last means a kind of elastic artificial cuticle is formed, which is impermeable to fluid until it cracks; and this it will not do for some few hours, with moderate care.

13. This chapter would be incomplete without a few words on the epidemic and infectious maladies which may complicate pregnancy. It is probably in reference to disorders of this class that Hippocrates says in one of his aphorisms that acute diseases are fatal to pregnant women. However this may be, the remark is still often made that during wide-spread epidemics, a smaller relative proportion of pregnant women have been attacked, than of others; but that when they suffer, they do so very severely. Gardien positively expresses this

opinion, for he says-" Les femmes enceintes sont moins exposées à gagner les maladies contagieuses, mais lorqu'elles en sont atteintes, elles succombent plus promptement."* This proposition is not altogether true. For example, in the epidemics of influenza, pregnancy formed no barrier to its invasion; and the disease ran its course in the ordinary way. remark applies to cholera; with the exception that it very often, as has been already mentioned, produced abortion. M. Bouchut in analysing fifty-two observations made upon pregnant women attacked with this disease, shows that twenty-five aborted in consequence, Of these twenty-five women, sixteen recovered; while of the twenty-seven who did not miscarry, only six recovered. But it must be noted that, of the women who recovered after aborting, only four had the disease in a rapid and dangerous form; while in the twentyone who died undelivered the disorder was short and severe, so that it may fairly be said there was scarcely time for the uterus to expel its contents. Apparently unmindful of this circumstance, M. Devilliers, jun. has argued that abortion produces a favourable effect upon the termination of cholera; and he has consequently recommended the provocation of miscarriage as a means of diminishing its fatality.

The eruptive fevers are all particularly dangerous to pregnant women. They very frequently produce abortion; and when this happens the mother seldom recovers. Probably small-pox is the most to be dreaded of this class of disorders; the confluent form appearing to be uniformly fatal to both the fœtus and the parent. If the discrete variety occur towards the end of gesta-

^{*} Traité Complet d'Accouchemens, et des Maladies des Filles, des Femmes, et des Enfans. Deuxième Edition. Tome II., p. 29. Paris, 1816.

tion, the child may be born alive; while it may also be healthy, or its body may be covered with variolous pustules. The fact has been already alluded to that a pregnant woman may be exposed to the contagion of variola, and, owing to her system being protected by vaccination or by an attack of the disease at a former period, she may escape; while the fœtus in utero alone suffers.

Dr. Montgomery believes that preguancy may prevent or delay the development of disease until after parturition, although the infection may have been previously caught. He relates three corroborative examples.* Thus Mrs. W., when in the ninth month of pregnancy, was much about her brother, who was dangerously ill of malignant scarlet fever. She seemed to have escaped the danger completely; but the day after delivery she was covered with the disease, and in a few days died. Between the time of her exposure to the contagion and the delivery, there had intervened three weeks; during which time she appeared to be quite well. Again, a Mrs. F. was in the eighth month of pregnancy, when she assiduously attended upon her husband, who was suffering from typhus fever. After his recovery, she went to her father's house, some fifty miles from town, where she was delivered in due time; but immediately after labour she was seized with typhus fever, of which she died in eight days. Between five and six weeks had elapsed betwixt Mr. F.'s illness and her labour; during which interval she appeared in perfect health. The third case was one of erysipelas, occurring in a young lady who was delivered on the 12th November, 1854, after a favourable labour. Previous to the birth of the child she complained of soreness

^{*} Opus jam citat. p. 43.

of the abdomen, which afterwards persisted. On the l4th, the insteps of both feet were covered with erysipelas, and the abdominal pain then began to subside, and in two or three days quite ceased. Dr. Montgomery was informed that some weeks before leaving home to go to Dublin for her confinement, her husband had a severe attack of erysipelas, during which she had constantly nursed him.

14. In concluding this chapter with some general observations on the therapeutics of pregnancy, I shall be as brief as the nature of the subject will allow. And at the outset it must be said that whatever may be the nature of the disease co-existing with gestation, the treatment should be mild and simple; heroic remedies, at least under these circumstances, being usually unadvisable. Our efforts must be directed more to assisting Nature by following in the path she points out, and when necessary by upholding the vital powers, than to cutting short the morbid action. Attention to all the laws of hygiene is especially demanded. And then, the practitioner, divesting himself of the trammels of routine, must freely consider his patient's case from every possible point of view; he should give due weight in summing up his evidence to her age, temperament, habit of body, and the duration of the disorder; he may advantageously bear in mind the season of the year, and the nature of the prevailing epidemics; and so he will be in a position to quietly and cautiously aid the curative processes, being unalarmed, even though he find, after making his diagnosis, that the scientific term for the disorder he has to cope with ends in that wretched dissyllable itis.

The history of medicine teaches us that the ancients almost prohibited bleeding during pregnancy; since they argued that every ounce of blood taken away from the mother was so much nourishment lost to the child. But there is undoubtedly a fashion in therapeutics; for about the beginning of the sixteenth century an abrupt reaction took place, and healthy pregnant females were then freely subjected to phlebotomy, merely because they were pregnant. In the last century, the French practitioners especially, bled almost every woman so soon as she became with child, then when she had gone half the term, again at the latter period of gestation, and a fourth time when labour came on. In the present day a physician who ordered a pregnant woman to lose blood would run a considerable chance of forfeiting the confidence of his patient; for whether it be true that our forefathers resorted to depletion unnecessarily, or whether there be a change of type in disease, it is certain that neither the bulk of the profession nor the public have now much faith in the curative powers of blood-letting. The probable quantity of blood in the human body has been variously estimated by different physiologists; but from some ingenious experiments by Valentin it seems that we shall not be far wrong if we assign about thirtytwo pounds for a man between thirty and forty years of age, and twenty-eight pounds for a woman, read, however, of the terrible bleedings which were formerly practised, one would think the blood constituted half the weight of the body, instead of one-fifth. The lancet was not only the remedy par excellence for a large number of diseases, but even occasionally the instrument by which a diagnosis was to be made. The abuse of a weapon, however, is no argument against its use; and therefore it is necessary to see if there are any good reasons for discarding the practice of general blood-letting in the

intercurrent diseases of pregnancy. Although it may be allowed that in some few cases women, during the term of utero-gestation, suffer from a state of plethora, vet I am sure that generally the reverse is the case. This latter remark is perhaps more particularly true of the inhabitants of large cities, many of whom are either weakened by the ills which belong to poverty and a residence in unhealthy localities, or are enervated by luxurious and idle habits. Mauriceau has termed pregnancy a disease of nine months. Without exactly endorsing this view, it may certainly be said that it is not a time of excess of health; for otherwise how can we account for the irritable condition of the nervous system which is so common, for the frequency-one in every five, according to M. Blot-of albuminuria, the occasional non-consolidation of fractures until after delivery, and the fatality of acute disorders. Moreover, though it is unnecessary to lay much stress upon the changes which the blood-as has been already pointed out-undergoes in its composition, yet it may be observed that it is allowed by all chemists who have recently investigated the question that the globules diminish from the beginning to the end of preguancy; and we know that bleeding, in all instances, especially tends to lessen the proportion of these elements. If to these points be added the proposition laid down by Dr. Todd*-" That the notion so long prevalent in the schools, that acute disease can be prevented or cured by means which depress and reduce vital and nervous power, is altogether fallacious," I think we shall have sufficient evidence to make every practitioner pause before opening the vein of a pregnant female. Of course I am not here speaking of the relief of local

^{*} Clinical Lectures on Certain Acute Diseases. Preface. London, 1860.

congestions by topical blood-letting. I believe, for example, that excessive congestion of the uterus is a not unfrequent cause of some of the special diseases of pregnancy, and that it may be best relieved by the application of two or three leeches occasionally to the lips of the womb. But this is quite beside the present question; and it is merely referred to in order that my meaning may not be misunderstood.

There is one other remark which suggests itself before leaving this subject, and it is this—that bleeding may, by inducing syncope, cause the death of the fœtus. The following case related by M. Depaul* is a good illustration of the truth of this statement:—

A young woman in the sixth month of her second pregnancy applied to this gentleman to be bled, as she stated that she suffered from giddiness and severe headache. Relying on these statements and on the condition of the pulse, he thought the loss of blood would be beneficial; and after having assured himself by the practice of auscultation that the fœtus was alive, he bled her. Having withdrawn ten ounces of blood, the vein was about to be closed, when the patient fainted; the state of syncope being so complete that for some moments the respiration and circulation seemed completely suspended. She was taken from the chair on which she had been sitting and placed in a horizontal position; but although the usual remedies were applied, twenty minutes elapsed before the circulation had resumed its normal rhythm. From this time the active movements of the child ceased to be felt; and five weeks afterwards she was delivered of a dead child; which it was concluded—from its condition—had died at the period of bleeding.-The following year this woman again became enceinte, and when the pregnancy had advanced to the end of the sixth month, she once more applied to be bled for the relief of giddiness and headache. The bleeding, practised under the same conditions, was followed by the same accident ; she fell into a perfect swoon, and on recovery the festal movements had ceased, and the pulsations of the infant's heart, which had been previously heard, could not now be detected. Some weeks afterwards she was delivered of a dead child. This second unfortunate result, together with the history of the case, made Mons. Depaul seek for further information ; and all he learnt forced him to the conclusion that the woman on the second application had simulated her headache, &c., in order that she might be bled with the same result as on the first occasion,

The use of cathartics or purgatives in the intercurrent disorders of pregnancy next demands attention.

^{*} Traité Théorique et Pratique d'Anscultation Obstétricale, p. 269. Paris, 1847.

Medicines of this class are chiefly used to remove the contents of the alimentary canal, to diminish the quantity of the fluids of the body by promoting secretion and exhalation from the intestinal surface, to excite the liver and pancreas to increased action, and to affect remote organs on the principle of revulsion. As a rule, different purgatives act on different portions of the intestinal canal; and our object must be to employ such as principally affect the duodenum and other small intestines, rather than those which irritate the rectum. Hence we avoid aloes, scammony, gamboge, coloeynth, and all drastics, such as croton oil or elaterium; while we resort to castor-oil, rhubarb, taraxacum, and the salts of soda or potash, or to enemata of warm soap and water. gruel and oil, &c. Senna is one of the drugs in common use which is generally considered harmless; but I am sure that I have seen it do mischief when administered during pregnancy, or when uterine disease has existed. Such an effect is not surprising when we remember that this agent stimulates the pelvic vessels, and has a tendency to promote hæmorrhoidal and menstrual discharges. Where active cathartics are deemed necessary. calomel or jalap may be used, since they especially excite the action of the duodenum, and promote the discharge of bile.

Diaphoretics are valuable remedies, to which the obstetrician may freely resort. To ensure the action of the medicines of this class, diluents—such as tea, gruel, whey, and cold water—must be freely given; and external warmth carefully applied. In the early months of pregnancy the hot water or vapour bath may be prescribed without any fear of producing abortion; but after the sixth month I should scarcely venture to order these agents without some particular reason.

When narcotics or sedatives are given habitually to pregnant women, they are said to exert an injurious effect upon the fœtus in utero. But this circumstance is not to prevent our cautiously using medicines of these classes, when they are called for by the presence of disease. To procure sleep, to allay pain and spasm, to diminish vascular and nervous excitement, and to arrest excessive secretion, it is often indispensably necessary that hyoscyamus, camphor, belladonna, conium, hydroevanic acid, ether, chloroform, or opium should be administered. In prescribing any of these drugs it is to be remembered that women are generally more susceptible to their influence than men; and that where there is much debility, with a disposition to miscarriage, great caution will be requisite, since they may then excite delivery.

Counter-irritation is resorted to in a large number of diseases, and not very uncommonly without doing the slightest good. Routine practitioners are especially fond of blisters; but these disagreeable agents should be but seldom employed under the circumstances we are now considering. If it be certain that counter-irritation is needed, sinapisms, turpentine stupes, and dry cupping will generally accomplish as much good as vesicants, or those substances (tartar emetic and croton oil) which produce pustular eruptions.

Tonics and stimulants may be employed in the intercurrent diseases of pregnancy almost in the same way that they are ordinarily used.

Amongst the classes of medicines which should be avoided I would place emetics, diuretics, and it need scarcely be said emmenagogues.—Of course a certain latitude must be allowed in acting upon these observations; since it is only possible to give here general rules and hints. Particular cases will occasionally happen,

where the principles which have been inculcated must be departed from. But the enlightened physician, who treats disease according to the condition of his patient and the precise nature of the morbid actions going on in her system, rather than in conformity with a mere nosological arrangement—a system in which each disorder has its appropriate remedy—will have little or no difficulty in understanding the extent to which he is to follow the foregoing landmarks.

CHAPTER X.

THE SYMPATHETIC DISORDERS OF PREGNANCY.

Section 1.—Disorders of the digestive organs.—1. Introduction.—
 Capricious appetite.—3. Tooth-ache.—4. Salivation.—5. Nausea and vomiting.—6. Cardialgia.—7. Hamatemesis.—8. Diarrhaa.—
 Constipation.—10. Jaundice.

Section 2.—Disorders of the organs of respiration and circulation.—

1. Dyspnæa.—2. Cough.—3. Hæmoptysis.—4. Palpitation of the heart.—5. Fainting.—6. Varices:—hæmorrhoids:—thrombus, or sanguineous tumour from the rupture of the enlarged vaginal veins, &c.

Section 3.—Disorders of the nervous system.—1. Cephalalgia.—2. Sleeplessness.—3. Hypochondriasis.—4. Nervous affections of the ears and eyes.—5. Mastodynia.—6. Pain of the right side.

Section 1.—The Disorders of the Digestive Organs.

1. Introduction.—Every one who has devoted much attention to the study of uterine diseases, is aware of the great number of sympathetic disorders to which they give rise. From the first catamenial period to the last, even when the menstrual function is performed naturally and painlessly, the excitement of the sexual organs produces a marked effect upon the whole system. It is scarcely surprising, therefore, that the wonderful changes which result from pregnancy, should considerably influence all the vital functions.

The effects induced by pregnancy vary very much indifferent women. With some constitutions the peculiar excitement which arises has only a directly beneficial influence, causing all the organs to act harmoniously and efficiently, and thereby producing a more healthy condition than exists at other times. In many cases, however, more or less troublesome symptoms are experienced. These are sometimes so slight as merely to produce a general feeling of discomfort, and sometimes so grave as materially to injure the general health, even if they do not endanger life.-The disorders of pregnancy arise chiefly from three sources :viz., from the important changes going on in the uterus producing sympathetic influences and derangements in distant organs; from the pressure of the enlarged uterus upon the parts near to or in contact with it: and from morbid states of the sexual system. The amount of sympathetic irritation excited in different organs varies much in different women; and unless excessive, must not be regarded as unnatural. a popular observation, confirmed by experience,"-says Denman-"that those women are less subject to abortion, and ultimately fare better, who have such symptoms as generally attend pregnancy, than those who are exempt from them. The state of pregnancy is then an altered, but cannot with propriety be called a morbid state. But if the term disease be used on this occasion, with the intention of giving a more intelligible explanation of the temporary complaints to which women are then liable, or to denote their irregularity, or an excessive degree of them, it may be retained."* No organ sympathizes more extensively with the uterus than the stomach; and hence one of the earliest symptoms of pregnancy is derangement of the functions of this viscus. Dyspepsia of course produces disordered nutrition; and thence necessarily follows a general deterioration of the "life of the flesh." When we remember that the corpuscles naturally become dimi-

^{*} Introduction to Midwifery. Sixth Edition, p. 126. London, 1824.

nished, and the watery portion of the blood increased, so soon as the system has to supply materials for the development of a new being, it can be easily understood how that which was at first a purely sympathetic disorder at length becomes converted into a troublesome disease. The chlorotic condition to which the pregnant woman thus gets reduced, partly explains many of the symptoms—e.g., headache, vertigo, palpitation, dyspnæa, and general feebleness—from which she suffers at an advanced period of gestation; which symptoms will, of course, be aggravated by any lowering treatment, while they can only be lessened by animal food, wine, ferruginous tonics, and such like remedies.

The corollary from these observations seems in part at least to be, that great attention should be paid to the diet of pregnant women; which-while it is to be simple. light, and nutritious—ought to be specially adapted to the requirements of the particular individual, and the condition of her digestive organs. In the way merely of a few common suggestions it may be said that improper indulgences in diet are not to be sanctioned; that highly-seasoned or very rich food is bad; that tea and coffee are to be used only in moderation, and in a great measure as vehicles for cream or plenty of milk : and that alcoholic stimulants are by no means always, nor perhaps even generally necessary. It is often erroneously thought that an unusual supply of nourishment is required during pregnancy to support the strength and aid the development of the fœtus. Consequently, either an increased amount of food is taken, or a change is abruptly made from a plain and nourishing diet to full and generous living. Both of these errors are to be avoided: for they will surely either give rise to a state of plethora, as injurious to the mother as to the embryo; or will produce in the former debility, dys-

pepsia, nausea, heartburn, &c., and in the latter constitutional feebleness. No argument is necessary to prove that the consequences must be the same to the infant, whether the insufficient nourishment of the maternal system results from want of food or from inability of the stomach to digest it. It seems to be often forgotten that to allow an abundance of nitrogenous food and stimulants is not always to impart permanent power or even necessarily to give temporary strength; for how can healthy nutrition result if the digestive functions are taxed beyond their powers,-if more food be eaten than can be properly digested and assimilated? Where the digestive powers are good, however, and eating is not followed by oppression or languor, there can be no harm in satisfying the appetite with such food as the patient may be accustomed to, and which she knows from experience agrees with her. As a general rule, milk, cream, lightly cooked and raw eggs. fish, poultry, mutton, beef, and game may be beneficially partaken of; remembering that not only is variety in diet very important, but also that it is necessary so to regulate the time of the different meals that the stomach may enjoy proper intervals of rest. A too spare diet is, on the other hand, no less injurious and reprehensible. Unhappily, however, it is less easily avoided: and many of the wives of the labouring classes not only suffer much themselves from their inability to procure a due supply of wholesome food; but, in consequence, give birth to feeble and unhealthy children. who ultimately perish from strumous or tuberculous disease.

With delicate women it will sometimes be found advantageous to advise them as to the nature of the water they should drink. Hard water, or that which contains much lime, magnesia, iron, and sulphur, is no

doubt injurious to the coats of the stomach of many an invalid. The owners of racehorses are so well aware of the importance of attention to this matter, that when the animals are sent away from their stables to the races, the soft water to which they have been accustomed is often forwarded with them; for a trainer would no more allow "the favourite" to have one drink of hard water when stabled on the chalky downs, than he would let him remain a single day without his gallop or without the most thorough grooming. Where there is very great irritability of the stomach in pregnant women small quantities of icy cold distilled water can sometimes be taken, when the fluid direct from a spring will not be tolerated. That which irritates the skin, can hardly be expected to soothe a mucous membrane. Now, for very fine skins pure soft water is seen to be much better for use than hard coarse water. Indeed, no cosmetic will be required by the lady who washes in distilled or in pure rain water; or even in water which has been well boiled and filtered, provided that the impurity is due to the presence of carbonate of lime. Whereas, however, all waters from the chalk, which hold carbonate of lime in solution, may be softened by boiling, those which are hardened by sulphate of lime are rendered still harder by this means, to an extent proportionate to the amount of the evaporation. It is not necessary here to allude to the injurious properties of bad water, -i.e., that containing decaying animal or vegetable matter, or which is rendered noxious by exposure to the effluvia from drains, or which is poisoned by contact with lead-because we are all well aware of the absolute necessity for prohibiting the use of such aqueous solutions of pestiferous matter. Since the mortality returns of 1849 and 1854 unmistakeably proved that a great excess in the deaths from cholera occurred

wherever bad water was supplied, any inattention to this point for the future would be almost unpardonable.

About the year 1850, M. Depaul revived the consideration of the question as to the possibility of partially arresting the development of the fœtus by almost starving the mother; so that, without injuring its health, or shortening its intra-uterine existence, the child when born might be small so as to pass through a contracted pelvis. This gentleman relates two cases in favour of his view that such a proceeding may sometimes be advantageously resorted to; and from these instances, and a general consideration of the subject, he draws the following conclusions:—

Ist. That bleeding and a low diet have an undeniable influence on the development of the child during its intra-uterine existence. 2nd. This plan can be adopted in malformations of the pelvis, and be substituted in some instances for artificial premature labour. 3rd. It is applicable with no less advantage in those cases, where, without a contracted pelvis, the extreme size of the fectus has in preceding labours caused fatal difficulties. 4th. The influence of a restricted diet, when the woman submits to it rigorously for a sufficient length of time, is much more efficacious than that of bleeding. The latter also cannot be often practised without compromising the pregnancy. 5th. Bleeding should, however, be combined with a low diet. It is especially useful in the last months of pregnancy, 6th. This plan, judiciously employed, has no unfavourable influence either on the progress of pregnancy, on the future health of the mother, or on the well-doing of the child. 7th. It is impossible to lay down a rigorous formula for its practice, for it should be modified according to circumstances and the especial aim in view. And 8th, the treatment should be resorted to early, and should be persevered with uninterruptedly till the end of pregnancy.*

Now the cases just alluded to of M. Depaul, those also related by M. Delfraysse—who administered small doses of iodine with iodide of potassium during the last two months of gestation, with the same intent,—and one recorded by Baron Dubois in 1855, where scarcely any food was taken during the whole period of pregnancy, are all very good examples of the post hoc ergo propter hoc reasoning so often met with in medical

n Médicale, Tome IV., p. 22. Paris, 12 Janvier, 1850.

essays. Because a certain plan of treatment was adopted with the mother in some half-dozen cases, and the child when born was found to be small, therefore we are to admit the existence of cause and effect. But if this be so, all the experience of daily life must be valueless. Ask the practitioners who attended the poor Irish women during the famine, if the infants were smaller than usual? Does not the Union doctor deliver paupers who have suffered the greatest deprivations and anxieties of children as large and lusty as those who first see light in the mansions of the great? It has often been noticed that women who get thin during pregnancy give birth to the largest children. In a case which was under my own care, the lady suffered severely from nausea and vomiting during the greater part of the nine months, so that she became quite attenuated and extremely feeble. Yet her labour was tedious and difficult, owing to the size of the infant, which was found to weigh more than twelve pounds. Look again at the infants born from mothers in advanced stages of phthisis. Louis refers to the case of a woman, whose lungs contained a great number of tuberculous cavities, and who died in the last stage of marasmus, three weeks after having been delivered of an extremely robust infant. On the other hand, Denman asserts in his treatise, from which I have already quoted, that-"if the mother has little uneasiness, and grows corpulent during pregnancy, the child is generally small." It seems unnecessary then to say more against M. Depaul's cruel proceeding; for even if we granted that the results obtained were as favourable as could be desired, still the practice could have nothing to recommend it in preference to the induction of premature labour at some time after the expiration of the seventh month.

2. CAPRICIOUS APPETITE. - Want of appetite, or even

a complete disgust for food, is not uncommon during the earlier months of pregnancy; and when of long continuance gives rise to great weakness and emaciation. As the dislike is chiefly towards animal food, attempts must be made to nourish the system by fresh vegetables, ripe fruits, eggs, light nutritious puddings, and milk.

A more remarkable peculiarity, is an irregular and deprayed appetite: in other words—a longing for absurd or even disgusting articles of diet, which is occasionally carried to such an excess as to constitute a species of monomania. The older writers seem to have taken a pleasure in detailing all the longings of pregnant women which they could hear of; as well as in giving minute descriptions of the extent to which these caprices were Hence the stories are numerous of frequent meals made of chalk, brown paper, charcoal, dirt of all kinds, ginger, broken pebbles, sealing-wax, slate-pencil, &c.: whilst Langius even mentions a woman, who-to gratify her extremely disagreeable desires-killed her husband, made a dinner off part of him while he was fresh, and then pickled the remainder.-When any of these whims are manifested, we may be sure that the functions of the stomach are imperfectly performed, and that the secretions of this viscus are in a vitiated condition. If we examine the patient's tongue it will be found coated with a thick fur; the mouth is filled with viscid saliva; the breath is generally most offensive; and there are frequent eructations of an acid glairy fluid. Of course, with these symptoms there can only co-exist bodily weakness, and great mental depression. Consequently the physician's course is clearly marked out. Instead of pandering or giving way to the fancies of the patient, she must be taught the necessity for exercising a proper amount of self-denial; attempts must be made to impart tone to the digestive organs; and mild alteratives, laxatives, pepsine, and simple vegetable tonics, may be administered according to the apparent requirements of the system. All violent medicines, whether purgative or otherwise, are of course to be avoided; their exhibition being fraught with equal danger to both the mother and fœtus. The diet should also be bland and nutritious; soda water or Vichy water will be found useful; exercise should be taken daily in the open air; and the patient's mind should be kept occupied, by change of scene, by persuading her to mix in cheerful society, and by providing healthy amusements.

3. TOOTH-ACHE.—Neuralgic pains in the dental nerves, especially in those of the upper jaw, are sometimes very troublesome. They are most common in the earlier months of gestation, but occasionally frequent attacks of pain are experienced through the whole period of pregnancy. The suffering, however, is not always simply neuralgie; for acute caries of some of the teeth may occur, giving rise to severe paroxysms of torture night and day. Doubtless the existence of a decayed tooth prior to conception may predispose the patient to attacks of this kind.

In all cases the mouth should be examined. If the suffering be due to caries, and only one or two teeth are affected, they should be extracted; provided the patient is strong enough to bear the shock of the operation. But if the pains are neuralgic, we must trust to efficient laxatives, tonics, good diet with wine or beer, sedative fomentations, and the local application of chloroform. I have found quinine combined with the compound tincture of valerian give lasting relief in cases attended with debility and nervousness. In other instances, when the blood has been watery, the valerianate of iron or the carbonate of iron has done

good. Opium occasionally has been required to relieve the distress; and I do not know that this drug can be employed in a more satisfactory manner than as an injection beneath the mucous membrane of the gum. Dr. R. H. Storer has recorded the case of a lady who suffered for several weeks from severe neuralgic pain throughout the left half of the upper jaw; which pain was at times of a lancinating character, and at others dull. The general health was decidedly affected, as evidenced by the state of the circulatory, digestive, and nervous systems. The teeth were all sound; and there was no heat or swelling of the gums, nor increase of pain on pressing them. Anodynes, refrigerants, emollient poultices, and counterirritants were successively resorted to without benefit. After much solicitation, a tooth was extracted; but the patient remained unrelieved. On the following day, ten drops of the Edinburgh solution of the bi-meconate of morphia were injected beneath the mucous membrane of the gum. The pain ceased instantaneously, and permanently; at least, it had not returned at the end of five months.

4. Salivation.—Hippocrates, and many writers since his time, mention the occasional occurrence of salivation as a sign of pregnancy. Mauriceau alludes to increased spitting as a common symptom of pregnancy; and Dewees says that almost all women have more than an ordinary quantity of saliva during uterogestation. When salivation happens, it generally commences at an early period, and either ceases about the end of the third month, or persists during the whole term of gestation. In a few rare instances it has continued for one or two months after delivery.

The salivary glands are usually found swollen and

tender, the buccal mucous membrane being also sometimes tumid and congested. But the gums are neither sore, spongy, nor ulcerated; and there is no fætid odour from the mouth, as there is so especially in mercurial ptvalism.—The amount of saliva secreted may vary from a slight increase of the natural quantity, to three or four quarts in the twenty-four hours; the fluid is tenacious or thin, and often has a rather unpleasant taste; and the excessive flow of it at night gives great annoyance, owing to the necessity for frequently emptying the mouth. In the few cases which I have seen, the patient has suffered from troublesome constipation; and the stomach has been weak and irritable, giving rise to a frequent sense of nausea. The ill-effects which sometimes ensue are well seen in the following characteristic case, recorded by Dewees.* This author says,-

"I was called upon to prescribe for Mrs. J., who was advanced to the fifth month of her pregnancy. At the second month she was attacked by a profuse salivation; she discharged daily from one to three quarts of saliva, and was at the same time harassed by incessant nausea and frequent vomitings: so irritable was the stomach, that it rejected, almost instantly, anything that was put into it. She now became extremely debilitated—so much so as to be unable to keep out of bed; and when she did attempt to sit up, she would almost instantly faint, if not instantly replaced. From a belief that the affection might be local, astringent gargles were freely employed, but with marked disadvantage. A large blister was next applied at the back of the neck, with decided but transient benefit—that is, the salivary discharge was less, the nausea diminished, and the vomiting less frequent; but this favourable impression was but of three or four days' duration; for after this time, all the unpleasant symptoms returned with their former severity. An emetic of ipecacuanha was now exhibited, followed by a cathartic of rhubarb and magnesia, without the smallest benefit; soda-water, lime water and milk, milk itself, &c., were in turn unavailingly employed. I now put my patient upon a strictly animal diet, and ordered ten drops of laudanum morning and evening, and fifteen at bedtime: this plan succeeded most perfectly in the course of a few days; nausea and vomiting ceased, and the discharge was reduced to less than a pint per diem; and perhaps the force of habit had no inconsiderable agency

^{*} A Treatise on the Diseases of Females. Tenth Edition, p. 201. Philadelphia, 1854.

in the production of this quantity. The bowels during this plan were kept open by the extract of butternut and rhubarb, in the form of pills. The lady never had any return of this complaint in her subsequent pregnancies."

Many patients are not as fortunate as Mrs. J. with regard to the non-return of the symptoms in subsequent pregnancies. On the contrary, it will often be found that the same phenomena recur again and again. I know of one case where the first appreciable symptom of pregnancy is salivation; which always continues until after quickening.

The treatment of this affection demands a little According to some foreign writers the discharge ought not to be suppressed, as the cure of it has been followed by apoplexy. Our fears upon this point need not deter us, however, from attempting to restrain the secretion when it is evidently deranging the digestive organs and weakening the patient. The first point is to attend to the functions of the bowels, a course of cooling laxatives being always necessary. The application of small blisters to the neck, or behind the ears, seems then more calculated to do good than any other single remedy; and it has seemed to me advisable to prevent the raw surfaces from healing for some short time by the use of irritating ointments. Local applications to the mouth are seldom of use; but inhalations of the vapour of turpentine or of creasote cannot prove at all injurious. If any gargle is at all likely to do good, one containing borax is the most promising in The following might be ordered my estimation. experimentally :-

R. Sodæ Biboratis, 5ij; Glycerinii, 5ij; Aquæ Rosse, ad 5viij. Misce, fiat Gargarisma.

Sucking Wenham-lake ice gives temporary relief, and is always a grateful remedy to the patient. With regard to medicines capable of acting directly upon the discharge, it can only be said that none are known of. I have tried the liquor potassæ arsenitis, and in one instance with benefit. Chlorate of potash, according to the following formula, may also perhaps be useful:—

B. Potasse Chloratis, 3iss-3ij; Infusi Cinchone Spissati, 3j-3ij; Aque Anethi, ad 5vj. Misce. Sumat 3j ter die.

It need only be further remarked that the irritability of the stomach, which appears sometimes to be the result of the ptyalism, will necessitate attention to the diet; and therefore the rules which have already been laid down upon this subject will have to be attended to. The confession must also be made, that not unfrequently all our efforts to check the secretion will end in disappointment.

5. NAUSEA AND VOMITING .- These sympathetic disorders are so common that there are few women who do not suffer from them during some stage of gestation. But it must be remembered that vomiting is also frequently witnessed in certain diseased conditions of the uterine system apart from pregnancy. Thus morning sickness is occasionally troublesome in dysmenorrhœa, in amenorrhœa, as well as when the catamenia get irregular at "the change of life;" it very often increases the prostration of the sufferer and hastens death in carcinoma uteri; and I have repeatedly seen it present in simple irritation and chronic inflammation of the ovaries. La Motte refers to a non-pregnant woman who vomited "solâ actione coitûs;" and to two others who had violent sickness at each catamenial period.*

The phenomenon under consideration, when it occurs in connexion with pregnancy, may present itself during

^{*} De Arte Obstetrica, pp. 54 and 75. Lugd. Batav., 1733.

the first few weeks of gestation, or throughout the whole term, or merely for the two or three latter months. In the first case it usually sets in about the end of the third or fourth week, though occasionally it begins within a day or two of conception. It is said. but I know not with what degree of correctness, that primiparous females suffer more frequently from vomiting than others; owing to the uterine tissues being more unyielding in first pregnancies than they afterwards become. So also some women assert that they only have sickness when the fœtus is of the male sex; a circumstance which they confess their inability to explain, save by the feminine argument "that it is so." -The attacks of retching, in mild cases, give but little pain or fatigue; though in more severe instances there is often exhaustion and considerable epigastric tenderness. It is not to be forgotten that probably in all cases the stomach itself is healthy; the sickness being caused by reflex irritation from the gravid womb.

Speaking with some degree of latitude, it may be said that the stomach only appears to be irritable during the early part of the forenoon; so that the patient, on rising from bed, feels oppressed with nausea, and usually makes an effort to vomit. From this peculiarity, the attacks are spoken of, as "morning sickness." The matters ejected consist chiefly of a glairy mucus, mixed with a quantity of sour, acid water; sometimes a little bile is present. When the attack comes on after a meal, of course the food is returned. The sickness does not take away the appetite for breakfast, and frequently it does not return until the following day; the attacks, perhaps, ceasing entirely at the end of six or eight weeks, though occasionally they continue for a somewhat longer time.

-Unfortunately, it must be confessed, that deviations from this ordinary type are not very rare. Every physician meets with instances where the irritability of the stomach is so extreme that directly any kind of food, or even plain water is taken, it is rejected, such cases the absence of all nutrition must lead to symptoms which are very formidable. The patient soon becomes feeble and exhausted; and there is daily increasing emaciation, the wasting sometimes going on to an extraordinary degree. The least exertion threatens to produce deadly syncope. There is much suffering, and uncontrollable restlessness; the countenance assumes an anxious expression, though many times no manifestation of fear is apparent; the eyes get sunken and the cheeks fall in; and there is an offensive sour odour in the breath. Unless amelioration occur, which may sometimes suddenly happen when matters appear nearly at the worst, a perfect loathing of all food and drink seems to set medical skill at defiance; violent epigastric pains torment the sufferer; and the retchings often persist, though the stomach be empty. But one step more, and a fatal result ensues; the victim either dying from starvation, or from the rupture of a blood-vessel during a violent fit of vomiting, or from a paroxysm of convulsions. At times there is disordered vision with hallucinations; and the system rallies and sinks again and again in the course of a few hours, like the flickering flame of a nearly burntout taper. Even to the last, however, the mind of the patient is often supported by the hope of relief; and repeatedly the intellect remains perfectly clear till death closes the scene. Numerous fatal cases are recorded; but I know of no author who has had the misfortune to meet with so many as Baron Dubois, who, during a

discussion on this subject at the French Academy of Medicine in 1852, stated that, in the course of thirteen years, he had met with twenty in his own practice.*

M. Dance is of opinion that when, during pregnancy, vomiting is protracted beyond the ordinary period, it usually arises from a morbid irritation of the uterus, which, together with the membrana decidua, is in a state of inflammation. He has had an opportunity in two cases of testing this opinion by post-mortem examinations. In one of these the uterine parietes were found thinned to almost a line and a half, soft, and gorged with blood; in the other, there was discovered pus and layers of coagulable lymph between the decidua and internal surface of the uterus, with other symptoms of He recommends the employment of inflammation. decided antiphlogistic measures, applied as near as possible to the uterus, and not to the stomach, which is only sympathetically affected.+ But inasmuch as cupping, leeches, blisters, and similar remedies were used in these instances without the slightest benefit, the wisdom of following M. Dance's advice seems at least open to doubt.

According to Dr. Henry Bennet, the discovery of the frequent existence of inflammatory ulceration of the neck of the uterus during pregnancy is one of vital importance, inasmuch as it affords a ready explanation of most of the accidents and morbid symptoms of the pregnant period. This gentleman says he has ascertained that this condition "is of frequent occurrence, that it is the keystone to the diseases of the pregnant state, and the most general cause of laborious pregnancy,

^{*} Ranking and Radcliffe's Half-yearly Abstract of the Medical Sciences, Vol. XVI., p. 367. London, 1853.

⁺ Medico-Chirurgical Review, New Series. Vol. VIII., p. 149. London, 1829.

obstinate sickness, moles, abortious, miscarriages, and hæmorrhages."* The inflammatory ulceration of the cervix will generally be found, on inquiring into the history, to have existed prior to the pregnancy; for though this state may sometimes be the cause of sterility when it attacks young married females at the onset of their married life, vet it does not seem to prevent conception in those who have previously had children. The symptoms it gives rise to are chiefly continued and severe pain in the lower part of the back, as well as in the abdomen, and especially in the ovarian regions; a muco-purulent vaginal discharge; a sensation of great pelvic weight and bearing-down; loss of appetite, strength, and flesh; headache, palpitations, constipation, and sickness; and increasing exhaustion, which may bring the patient to the brink of the grave. On practising the touch the ulcerated os uteri is found more open than is consistent with the period to which gestation has advanced; while the lips are soft, instead of being indurated, as they are when the non-pregnant cervix is inflamed, and they have a velvety or even fungous pultaceous feel. The vulva and vagina are extremely red and congested; and on examining with the speculum, the cervix is seen to be voluminous, tumid, of a livid hue, and more or less covered with large fungous granulations. The fungosity may be so great as even to give rise to a fear of malignant ulceration; while it bleeds readily, the hæmorrhage being sometimes periodical, so as to simulate menstruation.-The cure of all the foregoing symptoms is not very difficult. The chief remedies are free cauterization of the affected surface with nitrate of silver, the use of solutions of alum and

^{*} On Inflammation of the Uterus; its Cervix and Appendages. Third Edition, p. 158. London, 1853.

sulphate of zinc as injections, perfect rest, a light diet, and simple vegetable tonics.

Dr. Clay, of Manchester, believes that when obstinate vomiting occurs during the latter months, it will very often be found to be due to considerable congestive inflammation and great tenderness of the os and cervix uteri. He relates three cases as bearing out his opinion, and he deduces these observations from his general experience, which I cannot do better than give in his own words:—

"That the irritable state of the stomach is purely symptomatic of that condition of the os and cervix uteri (that is) in these obstinate cases of the latter months. That these cases differ widely from, and must not be confounded with, those of nausea and sickness of the early months, however severe; and where the stomach itself particularly, and in some measure the entire digestive functions are much deranged: and attention to the condition of the stomach will in most, if not in all cases, be remedied by medicine and diet. That diet or medicine have little or no effect in the severer cases above described, in the latter months; but that a position of the body calculated to relieve the os and cervix from pressure against the pelvic viscera, best accomplished by lying on the back with the hips raised and head low, with food in very small quantities given at long intervals. Lastly, and mainly, I rely on the application of a few leeches, applied through the speculum, direct to the os and cervix uteri, the seat of congestive inflammation, and consequently the cause of general irritation and sympathetic action of the stomach and its consequences. The leeches are to be repeated if any tenderness remains, and the position strictly observed until the symptoms are entirely conquered."*

In a few very rare instances, the attacks of vomiting are most troublesome when the patient is in the recumbent posture. In these cases Dr. Clay suggests that there is some tenderness and congestion of the uterine structure at or near the fundus uteri; and he says that he has had one case of this kind, which was soon relieved by stupes of warm turpentine and water, and the loss of a few ounces of blood from the arm.

We must now return to the consideration of the

^{*} On the Severe and Obstinate Forms of Vomiting during the latter months of Pregnancy, p. 7. London. No date.

treatment necessary for those examples of purely sympathetic vomiting from the state of pregnancy, where there is no morbid condition of the uterine organs; a class of cases which I believe to be far more common than any other. But first it should be observed that when the morning sickness is merely slight, medical interference will seldom be called for. Not a few practitioners consider this disorder to have a beneficial tendency rather than otherwise; and certainly with the public it is a common belief that women who do not suffer from it during the early months are very apt to miscarry. Dr. Bedford goes so far as to say :*-

"That there is a striking connexion between the absence of all gastric irritation and miscarriage, is a fact about which I do not entertain the slightest doubt; and on this assumption I have predicated a treatment, which, I am happy to inform you, has proved invariably successful. I could cite to you more than one instance in which miscarriage has occurred under these circumstances, and having been consulted in a subsequent pregnancy, in which the absence of nausea, &c., still persisted, I have been enabled to carry the lady to her full term, and deliver her of a healthy child. The treatment is extremely simple, and it is nothing more than an effort to assist Nature, and relieve the uterus from the effects of extreme congestion. I order the patient to take from one quarter to half a grain of ipecacuanha once, twice, or thrice a day, as circumstances may indicate, for the purpose of producing nausea, thus simulating as nearly as possible the course pursued by Nature, when not contravened by influences which she cannot control. This course of treatment is continued until about the fourth month of gestation, at which time the nausea and vomiting usually attendant upon pregnancy, as a general rule, cease."

Supposing, however, that the nausea and vomiting are having an evidently injurious influence, what is the course to be pursued? It may be said that our purpose must be threefold. First, to remove all irritating matters from the primæ viæ, and promote healthy glandular secretion; secondly, to assist the action of the stomach by sedatives, tonics, and a carefully regulated diet; and thirdly, other means failing, and life

^{*} Clinical Lectures on the Diseases of Women and Children, Fourth Edition, p. 557. New York, 1856.

being endangered, to remove the cause of the disorder by emptying the uterus.

Attempts then must first be made to get the secretions of the stomach, intestines, liver, and pancreas into a healthy condition; for which purpose moderate doses of rhubarb and soda, or of mercury and chalk, or of blue pill and henbane, or of taraxacum and sarsaparilla, or of the citrate of magnesia may be given. The functions of the stomach may also be assisted with great hope of benefit by the administration of pepsine, in fifteen grain doses, with the two chief meals of the Should purgatives be needed, seidlitz powders, or castor-oil, or draughts containing the sulphate and carbonate of magnesia may be prescribed; or what is often better, active aperient enemata may be used. The following may be recommended as a good formula, the croton oil being omitted unless the bowels are very costive :-

B. Olei Ricini, 5j—3iss; Olei Terebinthinæ, 3vj; Olei Crotonis, miij—mv; Tincturæ Assafætidæ, 3ij; Decocti Avenæ, 3viij. Misce, fiat enema.

When the evacuations have become healthy, we may
—in the second place—try the effect of some such
medicine as the dilute hydrocyanic acid; giving it in
doses of three to five minims, either with infusion of
calumba and bicarbonate of potash, or in a common
efferverscing draught with citrate of ammonia, or in
some such way as the following:—

B. Acidi Phosphorici Diluti, 3ij; Acidi Hydrocyanici Diluti, 5ss; Tincturæ Calumbæ, 3iij; Infusi ejusdem, ad 5viij. Misce. Capiat cochlearia ampla duo sextis horis.

In many instances more powerful sedatives will be needed. Resort must then be had to small doses of morphia, which often do great good. The extract of opium, in the proportion of half a grain to two grains, with three of extract of henbane, is a favourite remedy

with me; as is also Battley's sedative solution of opium, with chloric ether, sal volatile, and prussic acid. Certain quack preparations are constantly advertised as having a remarkably calming influence on the stomach; but I trust few will be found to lower the practice of medicine to such a mere mechanical art, as to prescribe remedies with the composition and nice properties of which they are utterly ignorant. As well might an experiment be made with Holloway's pills and ointment.—Professor Simpson speaks very strongly in favour of the salts of cerium, which appear to have a "sedative-tonic" action, like those of silver and bismuth. It must be confessed that they have more frequently caused me disappointment than otherwise, but still they are possibly worthy of further trial. The oxalate of cerium is generally used, in doses of one to two grains, made into pills; or a solution of the nitrate, in the same proportions, may be given in water,* This gentleman also cured one severe case-after ice, prussic acid, and half-grain opium pills had failed to give relief -by allowing the lady to inhale some laudanum for a few minutes from a small ether inhaler, hot water being applied to promote its evaporation. +-Salicine is often a very useful drug, since it allays sickness and promotes appetite and digestion. From three to five grains may be administered thrice daily, with tincture of orangepeel and water.-Such agents as quinine or steel will seldom be borne; and I have never found any benefit in these cases from creasote, lemon-juice, tincture of nux vomica, camphor, conium, acetate of lead, or iodide of potassium; and only rarely from the nitrate of bis-

+ Idem. p. 349.

^{*} Obstetric Memoirs and Contributions, Vol. I., p. 313. Edinburgh, 1855.

muth. Once or twice the following mixture has seemed to allay the vomiting:—

B. Magnesiæ Carbonatis, gr. xij; Bismuthi Nitratis, gr. viij; Acidi Hydrocyanici Diluti, mvj; Aquæ Anethi, zvj. Misce. Capint zij secunda quaque hora.

With regard to local applications to the epigastric region it must be mentioned that blisters, sinapisms, and turpentine stupes have their advocates; but in my own practice no agents of this kind have given so much relief as those having a purely sedative action. Lint saturated with a mixture of laudanum and chloroform, and laid over the abdomen, sometimes does good: or a liniment composed of a drachm of extract of belladonna, two drachms of tincture of arnica, an ounce of tincture of opium, two ounces of glycerine, and about five ounces of soap or turpentine liniment, often gives relief. Such also is the case with the belladonna plaster, with hot linseed-meal poultices sprinkled with laudanum, and with fomentations of a strong decoction of poppy cap-In purely nervous vomitings M. Dezou states that he has derived great advantage in three obstinate cases from the employment of a towel wet with cold water, wrung out, and applied as a compress to the pit of the stomach; having taken care to renew the application every five minutes until the feeling of nausea And lastly, it may be said that I have not seen any instance where it has seemed advisable to apply cupping-glasses or leeches to the walls of the abdomen; while the practice of venesection is simply mentioned, in order to condemn it.

Not only in cases where the cervix uteri was tender, but in other instances, I have found the use of medicated pessaries give relief after various means had failed; and hence such as the following may safely be tried:—

B. Extracti Belladonnæ, Dj; Morphiæ Hydrochloratis, gr. viij; Ceræflavæ, 3j; Adipis preparatæ, 3vj. Misce, et divide in pessos quatuor.—One of these is to be introduced into the vagina every night.

Where patients are very susceptible to the influence of narcotics, half a drachm of the acetate of lead may be substituted in the foregoing prescription for the morphia; and the belladonna may also be reduced to fifteen grains, if there be much weakness.

With regard to the general treatment, perfect quiet and the recumbent posture will be indispensable in bad cases. The diet ought to be light and nutritious; and if necessary only very small quantities of liquid food should be given at a time. It is obvious that it must be better to administer simply a teaspoonful of milk and one of essence of beef alternately every half hour when such is retained, than to give a teacupful and have it returned. A little light wine often does good; and therefore champagne may be allowed, or claret, or hock, or a glass of sherry in a little soda-water. In slight cases, where the sickness has only occurred in the morning, I have more than once checked it by directing a small cup of strong coffee to be taken about half an hour before rising from bed; this remedy being also especially useful when an opiate has been taken over-night. Sucking small lumps of Wenham-lake ice will be found grateful, and often alone serves to allay the irritability of the stomach: and the same remark applies to milk and lime-water, in equal proportions, made cold with ice, and given in small quantities every three or four hours. Where all kinds of ordinary food are rejected, the patient must be supported by nutrient enemata; a favourite formula of mine consisting of equal parts of very strong beef-tea, milk, and port wine, one ounce of pure glycerine, with or without a few drops of laudanum. The use of enemata need not necessarily prevent our recommending Liebig's New Soup for Invalids; since it will often be tolerated, when every other kind of food is rejected. It is thus made:—

Take ½ lb. of newly killed beef or fowl, chop it very fine, add 1½ lb. of distilled water, four drops of pure muriatic acid, 34 to 67 grains of common salt, and stir well together. After an hour the whole is to be thrown on a conical hair sieve, and the fluid allowed to pass through without any pressure. The first thick portions which run through are to be returned to the sieve, until the fluid filters through quite clear. On the flesh residue in the sieve pour slowly ½ lb. of distilled water, and let it percolate through. There will be thus obtained rather more than a pound of cold fluid (cold extract of flesh), of a red colour, and possessing a pleasant taste of soup; of which from one tablespoonful to a cupful may be taken at pleasure. It must not be warmed, since it is rendered muddy by heat, and deposits a thick coagulum of albumen and the colouring matter of blood. When the flavour is thought disagreeable it may be concealed by the addition of a little claret.

Moreover, in extreme cases the inunction of the finest sperm oil or sometimes of salad oil over the whole of the chest and abdomen once or twice daily does good. The powerful smell of cod-liver oil often alone induces nausea, otherwise it would probably be useful.

But unhappily it occasionally happens that all the remedies we can think of fail to exert any beneficial influence. It then only remains—in the third place—to induce abortion; care being taken not to delay this proceeding too long, since it will in all probability merely hasten death if signs of extreme exhaustion are present. The best method of procuring the expulsion of the fœtus need not be described here. Consequently in connexion with the present subject it is only advisable to mention that this plan of treatment must not be resorted to without a consultation with another practitioner; while the necessity of destroying the product of conception, in order to save the mother's life, should be fairly and fully explained to the husband or relatives before resorting to the necessary steps.

^{6.} Cardialgia.-Many women, especially such as

are of a nervous temperament, suffer much from heartburn during pregnancy, and often to a distressing degree. Cardialgia may exist alone, or it may be combined with pyrosis—water-brash.—To remedy these symptoms, any derangement of the abdominal viscera which may be present must be removed; attention must be paid to the diet; and then small doses of the mineral acids—especially the nitro-muriatic—are to be prescribed. Some such form as this will possibly effect a cure:—

B. Acidi Nitrici Diluti, 5j; Acidi Hydrochlorici Diluti, 5iss; Acidi Hydrocyanici Diluti, mxxv—mxl; Tincturæ Lupuli, 5iij; Infusi Calumbæ, vel Aquæ Destillatæ, ad 3viij. Misce. Capiat 3j ter die.

Benefit is sometimes derived from restricting the patient's drink to lime-water and milk, or to soda-water and milk, or to small quantities of iced water: when the burning is severe, the carbonate of soda in half-drachm doses, with or without ten grains of the nitrate of bismuth, gives relief most speedily and without subsequently doing mischief, as is the case with magnesia and chalk: and in some obstinate cases, I have found the oxide of silver with a small quantity of opium effect a cure after the failure of other remedies.

7. Hematemesis.—A discharge of blood from the stomach during pregnancy does occasionally take place, without the existence of any disease of this viscus. Dr. Churchill says that the causes may probably be found in a local or general plethora; and that he has no doubt it is in many instances a species of vicarious menstruation.* The attack is very seldom dangerous, although it alarms the patient. Cold acidulous drinks, a sinapism over the epigastric region, an active pur-

^{*} On the Diseases of Women, &c. Fourth Edition, p. 545. Dublin, 1857.

gative enema, and a few doses of gallic acid will usually suffice to stop it.

8. Diarrhea. - Attacks of diarrhea sometimes occur alternately with constipation, or more rarely with morning sickness. Some patients suffer habitually from looseness of the bowels during pregnancy; others are merely affected occasionally from improper food; whilst a third class appear liable to periodical attacks, about once a month. When the diarrhœa is allowed to continue unchecked, it not only generally weakens the patient, but perchance may produce abortion by destroying the life of the fœtus; or when the disorder is attended with tenesmus, it may directly tend to bring on contractions of the uterus. Much more rarely, however, the relaxation appears to do no mischief, but on the contrary seems to have a beneficial influence; since, if attempts are made to check it, the system immediately resents the uncalled for interference. The following example, recorded by old Peter Rommelius,* proves the correctness of this observation :-

A lady of spare habit and bilious temperament, and of a remarkably placid disposition, was always seized with a diarrhoza immediately after conception. With unfailing regularity the looseness returned every month during the whole term of pregnancy; being often accompanied by violent gastralgia. The advent of this periodical diarrhoza was always regarded by the patient herself as an indubitable sign of pregnancy. The symptom continued at each period for seven or eight days, and on each day there were from fourteen to twenty-five copious alvine discharges. Although but little food was taken, a moderately good state of health was enjoyed. In her first pregnancy medicines were exhibited with the intention of stopping the diarrhoza; but such unfavourable symptoms were produced, that it was necessary to discontinue them. In the absence of pregnancy the catamenia were natural and regular; whilst during the first week after conception there was an abundant leucorrhozal discharge, which became suspended as the diarrhoza was established. When the case was reported, the lady was the mother of three healthy children.

^{*} Miscellanea Curiosa, sive Ephemeridum Medico-Physicarum Germanicarum Academia Natura Curiosorum. Decuria secunda. Annus Quintus. P. 303. Norimberga, 1687.

The treatment of the diarrhoa of pregnancy must be cautiously conducted. Of course, when the looseness appears to be in any way beneficial, the practitioner will withstand all importunities for interference. Supposing, too, that the attack is slight, no remedies beyond attention to the diet will be required; for a cure may generally be effected by keeping the patient for twenty-four hours to small quantities of milk, arrowroot, and rice. If the symptoms show—as they not unfrequently do-that some irritating matter is in the intestines, half an ounce of castor-oil should be ordered; if the evacuations are offensive and acrid, indicating derangement of the secretions, four or five grains of mercury and chalk, repeated for three successive nights, will be beneficial; while if the discharges are simply excessive, five or ten grains of Dover's powder may be combined with the mercury and chalk, or we may administer some common astringent mixture containing either logwood, kino, rhatany, tannin, or catechu, &c. It should be recollected that no agent so speedily arrests the tenesmus and relieves the local pain as the opiate enema of the London Pharmacopæia.

9. Constitution.—This affection is only troublesome when it has been allowed to continue for many days. It is indeed incredible the length of time that some careless or indolent women will go without an evacuation from the bowels; and I have more than once seen most serious symptoms produced, by the lower part of the colon and rectum having become completely blocked up with hardened fæces, owing to such neglect.

The symptoms produced by constipation are at first slight, simple headache and general uneasiness being the most prominent. When an accumulation of fæces has taken place, these symptoms are much increased, and there is then more or less fever, loss of appetite, sleeplessness, distressing dreams, bearing-down pains, piles, and nausea. If we only question the patient carelessly, the cause of the suffering may readily be overlooked; since it has happened—as I have before explained—that a small quantity of liquid matter escaping by a channel formed through the mass or between the column of hardened fæces and the side of the intestine, and discharged daily, has led to the belief that the bowels were properly open. In such instances a vaginal examination should be instituted, when the rectum will be found distended and pressing into the vagina, so as materially to diminish the calibre of this canal. Moreover, this condition at the time of labour has formed a positive obstruction to the passage of the child.

If with obstinate constipation there co-exist severe vomiting, then both the umbilical, inguinal, and crural regions must be carefully examined lest there be any protrusion of intestine. The occurrence of hernia during pregnancy is not very rare. The natural openings in the abdominal parietes are rendered more and more lax as the walls become distended; and it can easily be understood how the enlarging uterus, by pressing upon the intestines, facilitates the escape of a portion of the bowel through either of the weak points. If a hernia be found it should of course be reduced, and a proper truss put on to prevent its descending again; while if it be irreducible from long standing, it is as well to give it support by a well-applied bandage. When the rupture is strangulated, an operation must be performed in the usual manner to divide the constriction.

For the treatment of simple constipation medicines are seldom necessary; daily exercise, regularity in soliciting intestinal action, with the eating of brown bread, fresh vegetables, ripe fruits, figs, prunes soaked in olive oil, or tamarinds, often sufficing. I believe also that the aërated bread will be found more useful than the common household or fermented bread, since it contains a peculiar agent which is absent in the latter. This substance, named cerealin, is found in the external coat of the wheat grain, and is torn away with the bran in the ordinary process of grinding; the miller being careful to prevent any mixture of the outer coat with the flour obtained from the centre of the grain, since he knows that its presence will diminish the white colour of the bread after fermentation. The action of cerealin as a special digestive solvent of the constituents of the flour-gluten and starch-is particularly insisted upon by Dr. Dauglish, who has introduced this new kind of bread: this gentleman asserting that its effect upon the gluten of wheat is precisely similar to that of pepsine on the fibrine of meat. Pepsine acting alone on fibrine dissolves it, but does so very slowly; while if lactic acid be added, solution takes place very rapidly. In like manner the starch present with the gluten of wheat is said to be acted upon by the cerealin, and to produce the necessary lactic acid to assist in the solution of the gluten by cerealin. Moreover, another advantage of the new bread is the absence of the prejudical matters -acetic acid and the yeast plant-imparted to ordinary bread by the process of fermentation.

To aid the digestion of animal food, pepsine—the digestive principle of the gastric juice—may be administered: by means of which dyspepsia, attended with constipation, may often be relieved. Sometimes the practitioner may direct the patient to drink half a pint of cold water the last thing at night and again early in the morning, with a good result; or, in more obstinate cases, the daily use of soap and water enemata is recommended; or the confection of senna, with extract

of taraxacum and bitartrate of potash in equal proportions—in doses of a teaspoonful—twice or three times a week, may be advantageously prescribed. If there be much tympanitis, a capital carminative cathartic may thus be made:—

R. Mannæ Optimæ, 3j; Olei Anisi, 3j; Aquæ Destillatæ, 3viij; Magnesiæ Carbonatis, 3iv. Misce. Sumat 3iss secunda vel tertia quaque hora.

In the same way one tablespoonful of castor-oil, with two drops of oil of peppermint and five or ten minims of tincture of opium, will give relief; or rhubarb and quinine in the following manner will be useful if there be dyspepsia with the flatulence:—

R. Tincturæ Quinæ Compositæ, Tincturæ Rhei Compositæ, āā 3j. Misce, Capiat cochleare parvum omni die post prandium ex Vini Xerici, 3j.

When, however, any accumulation of fæces has taken place, active purgatives are absolutely required, and such as this may be ordered:—

B. Fellis Bovis Inspissatæ, þj ; Magnesiæ Carbonatis, 5ss ; Magnesiæ Sulphatis, 5ss ; Tincturæ Jalapæ, 5ij ; Tincturæ Cardamomi Compositæ, 5ss ; Misturæ Camphoræ, ad 5iv. Misce. Capiat dimidium statim, et post horas tres, quod reliquum est, si opus sit.

This mixture proving inefficient, enemata must be resorted to; and if necessary, the substance should be mechanically removed with a scoop or with the handle of a spoon. I then generally order five or ten grains of the inspissated ox-gall to be taken daily for some time afterwards, to prevent any recurrence of the constipation; while if there is evidently a want of tone in the colon, a mixture is given thrice daily of fifteen or twenty minims of the dilute nitric acid in the compound infusion of gentian, or in the decoction of cinchona.

10. Icterus, or Jaundice.—We sometimes see pregnant women, at an advanced period of gestation, suffering from jaundice, for which we can assign no

other cause than the weight of the gravid uterus or of the loaded intestine in constipation pressing on the bile ducts, and so impeding the flow of this secretion. It generally passes away without giving rise to any trouble-some symptoms, except when too actively treated.—A woman may also accidentally become the subject during pregnancy of jaundice, from some direct impediment—as the obstruction of gall-stones—to the flow of bile into the duodenum: and if powerful remedies be ordered, abortion will very possibly be induced. Dr. David Davis mentions two examples which corroborate this remark:—

"One was married, and gave intimation of her being pregnant; the other was not married, and concealed her situation. The first was received into the hospital as a subject of tertian ague, for which one of the physicians prescribed bark. But the bark disagreed, and produced vomiting and abortion. In two days afterwards the whole of the jaundice had disappeared. She had advanced in her pregnancy about five months. The other being an unmarried woman, omitted to mention the fact of her pregnancy. She was treated actively for jaundice by another physician, who gave her emetics. Part of her ovum came away, and was followed by a sanguineous discharge. She then confessed that she was pregnant. The emetics were laid aside, and innocent placebos were substituted. All her jaundice left her, and in a few days subsequently she was delivered of the remainder of her ovum."

Sometimes, though rarely, the jaundice is connected with acute atrophy of the liver, the effect of inflammation of the parenchyma of this organ; and if the blood should become much overcharged with the constituents of the bile, cholæmic convulsions or coma may ensue. The kidneys are usually also diseased. The convulsions may present the character of alternating tonic and clonic spasms, or they may resemble tetanic spasms. They may be partial, affecting only the muscles of the mouth, chest, or abdomen; or one side of the body only may be convulsed, or merely the upper

^{*} The Principles and Practice of Obstetric Medicine, Vol. II., p. 872. London, 1836.

or lower extremities. When severe, they are very likely to cause abortion or premature labour, and to prove fatal to the mother. We are still ignorant as to which elements of the bile, or what products of their decomposition, exercise this baneful influence on the nervous system.

A case of pregnancy complicated with great enlargement of the liver has been reported by M. Villeneave.*

The chief points in the history are these:—

A lady, thirty-five years of age, was first attacked with inflammatory engorgement of the liver and jaundice when twelve years old. The inflammation and icterus disappeared under the use of remedies, but the gland remained of a large size. At the age of thirty, the general bealth was bad, while the enlargement of the abdomen was such that she presented the appearance of a woman at the full period of gestation. An opportunity was shortly afterwards presented to her of contracting an advantageous marriage; and M. Villeneuve with some other physicians was consulted as to the possibility in the first instance, and then as to the probability, of her being delivered safely of a living child, provided she accepted the offer. Unfavonrable replies were given to these interrogatories; but nevertheless the lady married, and became pregnant. During the latter weeks of gentation she suffered much from the great tension of the abdominal walls, as well as from dyspnea; but when labour set in she had an easy time, the child was healthy and well-developed, and a quick recovery ensued.

When the attack of jaundice is simply the effect of gestation, it gives rise to but little inconvenience. Consequently in such cases no treatment will be required beyond attention to the stomach and bowels. A few doses of alterative and aperient medicine will commonly do no harm; but surprise must not be felt if they have but little influence upon the disease. Relief may perhaps sometimes be afforded by the patient lying on her left side; but a cure is often only effected by the occurrence of delivery.

^{*} Journal de Médecine, Chirurgie, Pharmacie, &c. Par Corrison, Leroux, et Boyer. Tome XXIX., p. 354. Paris, 1814.

SECTION 2 .- DISORDERS OF THE ORGANS OF RESPIRA-TION AND CIRCULATION.

- 1. Dyspncea.—Pregnant women sometimes suffer from difficulty of breathing during the latter weeks of gestation; and occasionally from hysterical dyspnæa in the early months. With regard to the first, as it depends on the enlarged uterus pushing up the diaphragm and thus diminishing the capacity of the thorax, so little can be done for its relief beyond propping the patient up in bed, regulating the diet so as to prevent flatulent distension of the intestines, keeping the bowels properly open, and directing that no tight clothing be worn. The second form of dyspnœa will be best cured by antispasmodics and diffusible stimulants, such as musk, assafætida, valerian, &c.
 - 2. Cough.—During the early months a nervous or spasmodic cough frequently affects pregnant females; the attacks coming on in violent paroxysms, especially at night, occasioning much distress, preventing sleep, and being unattended by mucous or purulent expectoration. This cough generally depends on the sympathetic influence exerted by the uterus on the pulmonary organs; or it may result, at a later period, from the impediment which the progressive growth of the uterus by its pressure on the diaphragm and aorta offers to respiration and circulation. It is distinguished from the cough due to organic disease by the absence of expectoration, fever, quickened pulse, and of all stethoscopic signs. If unchecked, the repeated shocks may possibly loosen the connexion of the placenta with the uterus, and so produce abortion; or supposing this not to happen, yet the loss of rest, the uneasiness, and the headache produced by the fits of coughing give rise to general

disturbance and mischief. M. Miquel asserts that the epidemic cough of 1675 so powerfully affected pregnant females, that most of those who were attacked by it died.* In the treatment of these cases I have found no remedies so useful as antispasmodics combined with morphia or opium. Such a mixture as the following often gives great relief:—

B. Spiritus Ætheris Chlorici, Jiss; Spiritus Ætheris Compositi, 5iii; Acidi Hydrocyanici Diluti, mxx; Liquoris Morphiæ Hydrochloratis, 5ss-5i; Tincturæ Castorei, Jiss; Aquæ Menthæ Piperitæ, ad Jviij. Mise. Sumat sextem partem ter quaterve indies.

Another useful draught may be made thus:-

R. Spiritus Ammoniæ Fætidi, mxx; Tincturæ Camphoræ Composits, 5ss—5j; Misturæ Camphoræ, ad 5iss. Misce. Fint haustus bis de sumendus.

In the use of these narcotic remedies care must be taken not to allow them to produce prolonged constipation.—According to some authorities antiphlogistic measures, such as venesection, blisters, and tartar emetic are sometimes required; but I have always been very loth to try them in the cases which have come under my notice.

3. Hæmoptysis.—Spitting of blood from the rupture of some small artery distributed to the lungs is very rare during pregnancy; unless the hæmorrhage be due to the presence of severe organic disease.

Attacks of simple hæmoptysis sometimes, though rarely, occur; these probably—as Dr. Churchill has pointed out—" consisting of a secretion of blood from the mucous membrane of the bronchi, and occurring more frequently at the commencement of pregnancy owing probably to the sudden suppression of menstrun-

^{*} Traité des Convulsions chez les Femmes Enceintes, en Travail, et a Couche, p. 67. Paris, 1824.

tion, and being in fact a species of vicarious menstruation. I have had a lady under my care with whom this
occurred in three or four successive pregnancies about
the second or third month. The quantity expectorated
was considerable, but without effort and with little or no
cough. The stethoscope revealed no morbid sounds,
and the chest was clear on percussion. Astringents,
counter-irritants, and opiates sufficed to arrest the
discharge, and the patient speedily recovered her usual
health."* The treatment mentioned by Dr. Churchill
is that usually required. Should the practice of
auscultation prove the existence of any organic disease,
such special remedies as the nature of the affection may
demand must be had recourse to.

4. PALPITATION OF THE HEART. - The increased activity of the circulation during pregnancy, renders most women liable at one period or another of gestation to attacks of palpitation independent of any organic disease of the heart; nervous and feeble females suffering more than the strong and healthy. When the palpitation occurs in the earlier months, it is said to be due to sympathy with the uterine organs; when in the latter, either to the pressure of the womb on the abdominal vessels causing a reflux of blood to the superior parts of the body, or to displacement of the heart and pericardium owing to the pushing upwards of the stomach. diaphragm, &c .- When the palpitations are violent, all the large arteries of the body seem to pulsate excessively; the respirations also become hurried, there is noise in the ears, headache, and giddiness.-The physician who has once well observed a case of cardiac hypertrophy, can hardly mistake nervous palpitations for this affection.

^{*} Opus jam citat., p. 565.

In the cases we are considering there is none of the lividity of the cheeks and lips so commonly seen in hypertrophy; and the patient, instead of being listless or sluggish, is often full of life and spirits. Where the pressure of the gravid uterus is the cause of the palpitations, taking food increases them. Moreover, exercise diminishes them very often; while in hypertrophy it increases them. So also the increased impulse of the hypertrophied heart contrasts strongly with the sharp, short beat of nervous pulsation.-The treatment of these cases requires much caution. Generally speaking, antispasmodics with opiates and rest will sooner give relief during a paroxysm of palpitation than any other remedies; while a permanent cure may afterwards be effected by the careful use of ferruginous tonics, by allowing a nutritious but unstimulating diet, and by daily gentle exercise in the open air. In those cases where there is plethora and a tendency to internal congestions, a spare diet with mild purgatives will be needed; depletion in any more active form being usually very injurious. There may perhaps be a few exceptional cases where the application of leeches is required; but I do not think such will be met with amongst the inhabitants of large towns.

5. Fainting.—Some women constantly faint at the period of quickening; but they are usually in delicate health, and perhaps have been weakened by the continuance of morning sickness. Hysterical females, and such as are in the habit of fainting from slight mental or corporeal excitement, are also particularly likely to suffer during pregnancy.—The sensations which precede an attack of syncope are usually distressing; though Chamberet and the celebrated Montaigne have stated from their own experience that they are highly pleasur-

able. During the swoon the surface of the body is cold and pale; the pulse at the wrist is weak, so as often scarcely to be detected; the power of voluntary motion is abolished; consciousness is impaired, if not lost; and the respiratory actions are nearly suppressed. On practising auscultation the heart will be heard beating, but feebly. In some instances there is relaxation of the sphincters, and a discharge of the excretions. Repeated fits of syncope have produced abortion.-The duration of the seizure varies from a few seconds to ten or fifteen minutes, or even longer. As the patient gradually recovers, nausea and vomiting, or palpitations of the heart, or attacks of hysteria, often set in. Prolonged syncope has occasionally ended in dissolution. John Burns says-"There is a species of syncope that I have oftener than once found to prove fatal in the early stage of pregnancy, which is dependent, I apprehend, on organic affections of the heart, that viscus being enlarged, or otherwise diseased, though perhaps so slightly as not previously to give rise to any troublesome, far less any pathognomonic symptoms. Although I have met with this fatal termination most frequently in the early stage, I have also seen it take place so late as the sixth month of pregnancy."*

That fits of syncope should not very uncommonly occur at advanced stages of gestation might be expected; for we know that then especially the corpuscles of the blood are diminished in amount, the albumen is decreased, the proportion of iron is below the average, while the water is increased. These are precisely the characteristic features of chlorosis and anæmia. Moreover, why in pregnancy the proportion of fibrine in the

^{*} The Principles of Midwifery. Fourth Edition, p. 174. London, 1817.

blood is almost always above the physiological average can only be explained on the hypothesis, now very generally entertained by chemists, that this constituent is formed at the expense of the albumen; the marked diminution of the latter being consequently the cause of the increase of the former. Now, the correctness of the arguments which may be drawn from the results of chemical analysis is borne out by the symptoms which are so often complained of by pregnant women; for they are identical with those experienced in chlorosis. In both there is the same bodily and mental depression, and acorresponding liability to palpitations; the cerebral symptoms are similar; there are the like sudden flushings of the face, and attacks of chilliness alternating with increased heat; and there is the same dyspensia, loss of appetite, and tendency to neuralgia. Andral has long ago shown that either too great or too small an amount of corpuscles deranges certain functions of the brain in the same manner; and hence so many of the symptoms of anæmia have often been mistaken for indications of plethora.

During an attack of syncope no treatment can be better than that usually practised; such as the admission of fresh cool air, sprinkling the head and face with cold water, the recumbent posture, the removal of all tight articles of clothing, the cautious application of ammonia to the nose, and perhaps the use of sinapisms to the epigastrium. Subsequently tonics and a chiefly animal diet may prevent the recurrence of an attack. Even when there is disease of the heart, great good may often be done by the careful exhibition of mild preparations of steel.

6. Varices. Hæmorrhoids.—A varicose condition of the veins of the lower extremities is a very common

occurrence in multipara towards the latter part of gestation. Although rarely attended with danger, yet if the coats of the vessels become inflamed, a very distressing and even formidable disease may be induced. These varices seldom appear in first pregnancies; but generally perhaps commence during the second gestation. get worse in the third, and so on until they cause very great annoyance, and even anxiety for fear of rupture. On examination the knotted dilated veins are often found of an incredible size; and sometimes the whole network of superficial veins seems to be involved. especially those below the knee. A transverse position of the fœtus in utero may, by causing great pressure at the pelvic brim, and so obstructing the returning current of blood, give rise to aggravated varices even in primiparous women. The cause being mechanical-i.e., the pressure of the enlarged uterus-a cure during pregnancy cannot be hoped for; and, as a rule, any operation would be improper. Relief may, however, be given by properly bandaging the affected limb, or by the use of a well-made elastic stocking. Rest in the recumbent posture may also be enjoined in severe cases; and in all instances the patients should be cautioned against increasing the affection by the use of stays and garters. a simple suggestion which is generally neglected. Moreover, where there appears to be the least fear of rupture of the coats of the vessel, it is advisable to explain to the woman and her friends how, in the event of its occurrence, pressure is to be applied below the wound, so that the bleeding may be controlled until skilled assistance can be obtained.

A varicose condition of the vaginal veins is sometimes met with. If any one of these enlarged vessels should give way, either spontaneously or from injury, a large quantity of blood gets effused into the areolar

and adipose tissues of the vulva; and a considerable swelling rapidly forms, which is spoken of as a sanguineous tumour or thrombus. This tumefaction takes place much more frequently in the latter than in the earlier months of gestation; and still more commonly occurs during delivery, perhaps just as the head is about to pass. The accident is commonly announced by the sudden occurrence of great pain, rapid distension of the affected labium, and possibly syncope. The prognosis is unfavourable. M. Deneux states that of sixty-two instances brought to his knowledge, the mothers died in twenty-two, either during the gestation, or else during or after delivery; while all the infants of these twenty-two women likewise perished. Death is either caused by the hæmorrhage being profuse; or more rarely by the suppuration and gangrene which are not unlikely to follow the primary symptoms.

When the thrombus appears prior to the time of labour, and the tumour is not larger, for example, than an egg, and is not increasing in size, it may reasonably be hoped that a coagulum has formed, and that the hæmorrhage is thereby arrested. Hence it will be better to leave the case to Nature, in the expectation that absorption may occur; or at all events simply to apply cold evaporating lotions. But if the effusion be great, and the blood be still pouring out of the ruptured vessel, the tumour ought to be at once incised. In one case which came under my notice I was led to adopt this practice, because the blood was evidently making its way upwards, and the patient's condition warned me that any delay would be attended with extreme danger. After making a free incision externally through the integuments, and turning out a large clot, I pushed in a sponge thoroughly moistened with a saturated solution of the perchloride of iron, All bleeding was arrested, and the patient did well; being afterwards safely delivered of a live child.

Hæmorrhoids or piles, like varices, may arise during pregnancy from the pressure of the womb on the hypogastric vessels; or they may originate from prolonged constipation resulting in fæcal tumour; or, in short, from any condition which impedes the natural return of the blood from the numerous vessels of the rectum. The symptoms produced both by external and internal hæmorrhoids are too well known to need description here. Suffice it therefore to say that when small they usually cause slight uneasiness or pain, some itching with irritation, and occasionally a little bleeding after an evacuation of the bowels which may oftener prove beneficial than otherwise; whereas when they are large and inflamed they produce the most excruciating suffering and high sympathetic fever.

The indications for treatment are in all cases to keep the bowels moderately open; for which purpose, under the circumstances we are considering, castor-oil will be found a more efficient laxative than any other medicine. this aperient be very objectionable to the patient, a confection made of equal parts of sulphur, bitartrate of potash, and extract of taraxacum may be substituted. Small enemata of tepid water are also occasionally useful. To simple piles astringent lotions may be applied, or the compound gall ointment may be used : but if the tumour be inflamed it may be necessary to put one or two leeches to it, to sedulously foment the parts with a solution of poppy-heads, to enjoin perfect rest in the recumbent posture, and to relieve the urgent distress by the internal administration of opium after the rectum has been emptied by an enema of castor-oil. Supposing that an internal pile has been forced down and strangulated, it should be well bathed with hot

water and carefully returned; while if there be any difficulty in accomplishing the latter, the swelling must be scarified. Occasionally a pile is found inflamed and distended by a coagulum. In this case a free puncture will afford immediate relief. Attempts at the radical cure of hæmorrhoids during pregnancy should not be made.

Section 3 .- Disorders of the Nervous System.

1. CEPHALALGIA.—Pregnant women of all temperaments and constitutions are liable to pain in the head, attended with intolerance of noise and incapacity for exertion: symptoms which, if not dangerous, are at all events so distressing, that the aid of medicine is often sought for their relief .- The two chief varieties of cephalalgia are those dependent on debility, and those simply caused by sympathy with the changes going on in the uterine system. But of course it must not be forgotten, that as in the non-pregnant female so in the pregnant, the headache may be due to general plethora and congestion; or, to inflammatory action in the brain or its membranes; or, to some organic change in the inter-cranial mass; or, to disease of the bones of the skull; or, to the presence of an active poison in the system, as that of gout, rheumatism, ague, &c.; or, lastly, to some disorder of the stomach, liver, or bowels.

The headache dependent on debility may be constant, or it may come on in paroxysms. It is more frequently of a dull aching character, than acute and throbbing; there is intolerance of sound and perhaps of light; there may be drowsiness and giddiness; the skin is cool, the pulse is small, and the eyes are dull; while the face is

rale, and does not become flushed as in the congestive varieties. In nervous women the pain is sometimes confined to one side of the head—hemicrania; in which case it is usually most severe in the morning, often ceasing entirely as the evening approaches. The treatment of these cases is sufficiently simple; due regulation of the digestive organs, a mild nourishing diet, gentle exercise in the open air, cheerful society, and the exhibition of mild tonics—occasionally of quinine and iron—sufficing to cure. When the vital powers are much exhausted, the frequent administration of wine or any of the diffusible stimulants will do great good.

The sympathetic headache—clavus hystericus—is generally limited to a small space, or even to a single spot on the cranium; the pain being described as that of a wedge pressing on the brain. In prescribing for this form, care must be taken that the bowels are properly open. If purgatives are required, enemata of castor-oil, turpentine, assafætida, and gruel will be found very efficacious. Then tonics, diffusible stimulants, or anodynes may be ordered. The extract of aconite in doses of about half a grain every four or six hours, sometimes gives more relief than other remedies. Cold evaporating lotions, or Eau de Cologne applied to the painful part, at least affords temporary relief.

2. SLEEPLESSNESS.—The problem of what is sleep still remains to be solved by some future Œdipus; physiologists and poets having as yet equally failed to define the exact nature and cause of that condition in which more than one-third of human existence is consumed. "Half our days we pass in the shadow of the earth, and the brother of death extracteth a third part of our lives," says Sir Thomas Browne; and yet we really know but little of the complex and ever-varying states

of that which brings such indispensable comfort and renovation to both mind and body.*

Whatever the nature of sleep may be, however, we are only now concerned with the causes which prevent, and the means which may be adopted to favour or produce it. Sleeplessness often particularly distresses pregnant women, and when obstinate or long-continued leads to serious constitutional disturbance; a circumstance which is not surprising when the misery of a restless night is remembered. In puerperal cases, insomnia is not unfrequently the precursor of delirium or mania. The women who suffer from an inability to sleep during pregnancy are often of a nervous temperament; and such as are easily excited. It is well known that mental occupation when moderate causes sleep, but when excessive prevents it. Deficient exercise, and a constant residence in a close, over-heated atmosphere produces fever and loss of sleep. So also dyspepsia, in all its forms, is a fertile source of restlessness. Hence to secure repose which may be refreshing and renovating to both mind and body, a proper amount of exercise should be taken during the day; the

^{*} Honest Sancho Panza, with his strings of misapplied proverbs, never spoke more to the purpose than when he said,—"But.well I know, that while I sleep, I am troubled neither with fear, nor hope, nor toil, nor glory; and praise be to Him who invented sleep, which is the mantle that shrouds all human thoughts; the food that dispels hunger; the drink that quenches thirst; the fire that warms the cold; the cool breeze that moderates heat: in a word, the general coin that purchases every commodity; the weight and balance that makes the shepherd even with his sovereign, and the simple with the sage."—Don Quizote. Part II. Book V., Chapter 16.—In contrast to this vulgar description, let me quote a scientific definition by Dr. J. J. G. Wilkinson. Mr. Braid says that it is interesting, as well as elegantly and lucidly expressed; but it seems to have the one trifling fault of being perfectly unintelligible. The doctor says,—"The atom of sleep is diffusion; the mind and body are dissolved in unconsciousness; they go off into nothing, through the fine powder of infinite variety, and die of no attention; common sleep is impersonal."—On Magic, Witchcraft, Animal Magnetism, Hypnotism, and Electro-Biology. By James Braid, M.R.C.S. Third Edition, p. 54. London, 1852.

diet should be digestible, and especially such as will not favour the production of flatulence or acidity; and no tea or coffee should be allowed in the after-part of the day. In many cases I have seen benefit from the dinner being taken about half-past one or two o'clock in the afternoon, as was the old-fashioned custom; while a light supper has been enjoyed about an hour before bed-time. The patient should retire to rest at an early and regular period; the apartment should be quiet, and proper means taken to have it well ventilated; and if the weather be at all chilly, a fire may often be kept up during the night with great advantage. Although a very low temperature predisposes to somnolence, vet I am sure that the moderate degree of cold which we have for six or eight months in this country has the reverse effect with many delicate individuals. The bed should generally consist of a mattrass, without too many heavy blankets; the pillows should not be high; and no curtains or hangings should be permitted.

If attention to these simple rules fails to produce the desired effect, one or other of the following different plans may be practised perhaps somewhat empirically. For example, it has happened to me to see a good result, particularly when there is any debility, from a tumblerful of port wine negus, or of mulled claret, or of white wine whey being taken the last thing at night. In other instances, where the skin has been hot and dry, a glass of cold water has appeared to be useful. So, again, the employment of a bath for about three or five minutes, at a temperature varying from 90° to 96° F., just before going to bed often affords relief: as does also a rapid sponging of the body with tepid water. The reading of exciting works of fiction late in the evening is to be prohibited; and everything that is possible should be done to remove anxiety, or to allay

any feeling of apprehension which may exist as to the result of the labour .- If any physical cause for the wakefulness can be discovered, it must of necessity be removed. Thus, supposing the bowels to be constipated, or the excretions to be unhealthy, laxatives and alteratives will be required; though it is as well to remember that owing to the close dependence of sleep on the condition of the alimentary canal the exhibition of purgatives at bed-time should be avoided. These measures failing to procure the somnus qui faciat breves tenebras, sedatives must be resorted to; and as conium, hop, henbane, and lettuce neither affect the head nor confine the bowels. they should first be tried. But not unfrequently stronger drugs will be needed; and then a quarter of a grain of morphia with some chloric ether, or a grain of the extract of opium with three or four grains of hyoscyamus. or twenty drops of Battley's solution of opium with half a drachm of the compound spirits of ether will be found useful forms.

With regard to the plans recommended by authors who have specially written on sleep, I may say-having often experienced the truth of Madame de Sévigné's remark, that there are twelve hours in the day and fifty in the night-that I have tried them all without the least benefit; and indeed, to speak the truth, have found that "Nature's soft nurse" has been more certainly propitiated by reading the writings of some of these gentlemen, than by internally repeating some half-dozen times any popular rhyme, or by slowly counting up to one thousand, or by directing the eyes and thoughts to any one fixed spot, or by taking deep inspirations and allowing the imagination to stray until the breath could be seen passing in a continuous stream from the nostrils. However, as the best of these schemes may perhaps succeed with some nervous women, and as they have the recommendation of being harmless, their authors may be allowed to speak for themselves. First then, Mr. Braid says:*—

*A method of producing sleep at will, however, without the use of opiates, may be most advantageously resorted to, on certain occasions, by most people; and I shall therefore briefly describe the method devised by me for that purpose. In my work on hypnotism, published in 1843, I explained how 'tired Nature's sweet restorer, balmy sleep, might be procured, in many instances, through a most simple device by the patient himself. All that is required for this is simply to place himself in a comfortable posture in bed, and then to close the eyelids, and turn up the eyeballs gently, as if looking at a distant object, such as an imaginary star, situated somewhat above and behind the forehead, giving the whole concentrated attention of the mind to the idea of maintaining a steady view of the star, and breathing softly, as if in profound attention, the mind at the same time yielding to the idea that sleep will ensue, and to the tendency to somnolence which will creep upon him whilst engaged in this act of fixed attention. Or it may be done with still more success, in certain individuals, by their placing some small, bright object in a similar aspect, with a distant light falling thereon, the party looking at the object with open eyes, fixed attention, and suppressed respiration. Other modes of producing a state of mental concentration, directed to some unexciting and empty thing, and thus shutting out the influence of other sensible impressions, may also prove successful for inducing calm sleep, by monotonizing the mind—just as we see effected in the case of children, who are sent to sleep by rocking, patting, or gentle rubbing, or monotonous unexciting lullabies, -but none are so speedy and certain in their effects, with patients generally, as the modes which I have briefly explained,"

Another mode of winning sleep is described by Dr. Binns, who thinks it will succeed when all other plans have failed: +—

The sufferer is to turn on his right side, "place his head comfortably on the pillow, so that it exactly occupies the angle a line drawn from the head to the shoulder would form, and then slightly closing his lips, take rather a full inspiration, breathing as much as he possibly can through the nostrils. This, however, is not absolutely necessary, as some persons breathe always through their mouths during sleep, and rest as sound as those who do not. Having taken a full inspiration, the lungs are then to be left to their own action—that is, the respiration is neither to be accelerated nor retarded too much; but a very full inspiration must be taken. The attention must now be fixed upon the action in which the patient is engaged. He must depict to himself that he sees the breath passing from his nostrils in a continuous stream and the very instant that he brings his mind to conceive this apart from all other ideas, consciousness and memory depart; imagination slumbers; fancy becomes dormant; thought ceases; the

^{*} Opus jam citat., p. 91. † The Anatomy of Sleep. Second Edition, p. 435. London, 1845.

sentient faculties lose their susceptibility; the vital or ganglionic system assumes the sovereignty; and as we before remarked, he no longer wakes but sleeps. For the instant the mind is brought to the contemplation of a single sensation, that instant the sensorium abdicates the throne, and the hypnotic faculty steeps it in oblivion."

When the rest is disturbed by frightful dreams, but little benefit can be derived from the repose, and occasionally positive mischief is done. One lady is known to have had such fearful dreams that she was obliged to employ a nurse to sit by her bedside at night to watch her countenance; so that if it became alarmed or disturbed, she might at once be awoke. Mauquest de la Motte relates an instance where a patient in the ninth month of her first pregnancy dreamed that she saw a frightful spectre, which insisted upon lying down beside her. She awoke in great horror, and was immediately seized with labour pains. At the end of thirty-six hours she was so exhausted, that it was found necessary to terminate the labour; the child being still-born, and the mother dying two hours afterwards.

3. Hypochondriasis.—Amongst the other anomalous symptoms which may follow on gestation, it is necessary to notice that feeling of despondency which occasionally takes possession of a woman's mind; leading either to an undefined apprehension of present danger, or to the almost ever-present idea that her labour will certainly end fatally. These attacks of mental depression are by no means natural; for every physician knows not only with what confidence a woman usually looks forward to the time of parturition, but with what reliance and fortitude she bears a large amount of suffering. Hence, I confess, that when I see a patient frequently in tears, evidently unhappy, losing all interest in life, and anticipating nought but danger from her labour, I feel some alarm for the result; for I have more than once found that

these forebodings were not altogether groundless. such cases no lowering measures are to be put in force; no suspicion of congestion or inflammation of the brain is to mislead the practitioner. But any derangement of the bodily health must be cautiously looked to; and if-as is not unfrequently the case-there is slight fever, bad appetite, loaded tongue, foul breath, nausea, and irregularity of the bowels, then mild laxatives will be needed, and subsequently such medicines as may give tone to the digestive organs.

The drugs which I have especially found useful in mitigating attacks of hypochondriasis are rhubarb and soda, quinine and citrate of iron, chloric ether with some bitter infusion, and pepsine. The great advantage of the latter agent is that it not only assists the assimilation of food, but also allows such a tonic as the following to be given with advantage, where without some aid to digestion it could not perhaps be borne:-

B. Spiritus Ætheris Chlorici, Jiss; Spiritus Ammoniæ Aromatici, Jij; Quinæ cum Ferri Citratis, Jss; Tincturæ Calumbæ, Jiij; Aquæ Destillatæ, ad Jviij. Misce. Sumat partem sextem bis terve die.

Another form which is sometimes useful when a tonic with a mild alterative is indicated, may run thus :-

B. Spiritûs Ammoniæ Aromatici, mxx; Sodæ Bicarbonatis, gr. v-xv; Tincturæ Hyoscyami, mxv; Infusi Gentianæ Compositi, 3iss. Misce. Fiat haustus bis die sumendus cum pilulas sequente:

— Quinze Disulphatis, gr. i—ij; Pulveris Rhei, gr. v; Extracti Gentianæ, gr. iij. Misce. Fiant pilulæ duæ.

The moral management of these cases is, however, possibly more important than the purely medical. fears are entertained merely as to the amount of pain which has to be gone through, we can happily undertake to give complete immunity from suffering by the exhibition of the vapour of sulphuric ether or of chloroform. The dread of bodily anguish has sometimes so upset the balance of the mind as to produce really

alarming symptoms, amounting perhaps to a form of Reasoning or persuasion here does no monomania. good: a positive assurance of our power to annul all discomfort with safety must be given; and it is often an act of kindness to offer the assurance in writing, so that it may be read again and again when the attacks of despondency come on in the physician's absence. Should the apprehension of danger to life be the cause of the attack, the practitioner will do well to promise to be by his patient's side from the beginning until the completion of the labour. A humane and sympathizing demeanour will almost always instil hope and confidence into the woman's mind; and he who has seen the good effect of imparting courage will not regret any little extra trouble which may be necessary. Moreover, hypochondriacs should not be allowed to witness any scenes of real or imaginary distress; and amiable, though perhaps not discreet friends, may be warned against relating the exaggerated histories of any bad accouchements with which they happen to be acquainted.*

When these manifestations of fear continue to be exhibited after the process of parturition is safely completed, it is to be dreaded that they are due to some serious cerebral derangement; which, if it exist, is not at all unlikely to end in an attack of puerperal mania, or even of confirmed melancholia.

4. Nervous Affections of the Ears and Eyes.—
It has happened in some very few instances that the power of hearing has been suddenly abolished during the earlier months of gestation, and has only been gradually recovered after parturition. Occasionally the opposite

^{*} The reader will find some further observations on the conduct of women during pregnancy in the author's Practical Treatise on the Diseases of Infancy and Childhood, p. 9 to 15. London, 1858.

condition is induced; and this sense is rendered painfully acute. So also cases are recorded where severe pains have been felt, either continuously or at regular intervals, in the orbit; or where the eyes have been rendered preternaturally weak; or where there has been double vision; or even where the retina has become temporarily insensible to every stimulus, producing complete amaurosis.

Generally speaking, medical treatment fails to give any relief to these disorders. They will continue in spite of all remedies until after parturition; and then they pass off spontaneously. The chief point is to be able to assure the patient that she may almost certainly reckon upon delivery effecting a cure.

5. MASTODYNIA, OR PAIN IN THE BREASTS.—Nervous and irritable women not unfrequently suffer from severe neuralgic pains in the breast soon after conception. As pregnancy advances, the breasts become gradually enlarged and rather hard; and the tension and pain is sometimes intolerable. This suffering gives rise to sleeplessness, loss of appetite, with general agitation; and occasionally the engorgement ends in inflammation and suppuration. Not unfrequently the pain radiates from the breast, and affects the side of the neck and head, or the shoulder, or the muscles down the back. Sometimes it is described as being dull and heavy, while in other instances it is so sharp and acute that the patient fears to move. It may disappear for a few weeks and then return; or it may assume an intermittent character, coming on at a certain hour every night. There is generally no tumour, nor any appreciable alteration in the structure of the gland.

These pains are often difficult to relieve. Emollient poultices, anodyne lotions, the application of the extract

of belladonna, and friction with the iodide of lead ointment to which some extract of opium has been added,
are the chief remedies. Antacid laxatives and rest will
be necessary. If the suffering occurs with any degree
of periodicity, quinine will often prove beneficial.
Should an abscess form, it must be opened. When the
mammæ are large and heavy they ought to be supported
with a bandage; for the mere dragging of a voluminous
breast may produce neuralgia. Mental relief will always be given by calming the patient's fears as to
the nature of the disease; since it is worthy of recollection that directly a nervous woman has pain in her
breast, she usually concludes that it must be due to
cancer.

6. PAIN OF THE RIGHT SIDE.—Few ailments are more harassing while they last than this; and hence it is fortunate that the affection is not common. In order that the student may not mistake the nature of this pain when he is called upon to treat it, I would ask him to carefully consider the details of the following case, which may be taken as a typical example of this disorder. We will imagine that he is in the sick-room. that the time is the evening, and that he has before him a patient advanced to the eighth month of pregnancy. He is told that until the last week the general health has been good; but that there has been some annovance from the presence of varicose veins, and perhaps from swelling of the legs. He sees the woman on her bed. occupying a semi-recumbent posture, and leaning towards the left side. Every inspiration and cough causes pain. and the least movement makes the sufferer almost shriek. To sit up, or to turn over to the right side is impossible, such is the agony these positions give rise to. The surface of the body is bathed in sweat, the pulse is

quick, the tongue furred, the countenance distressed and anxious; and an earnest cry for relief is made. bowels have only been slightly open, and the evacuations . have been almost black and very offensive. pain is seated on the right side, about the edges of the false ribs; in fact, over the right hypochondriac region. It is of a stabbing or stinging nature; and though it has been slightly felt during the last day or two, it is only on this particular evening that it has become quite unbearable. "Is it inflammation of the liver?" she gasps out. Clearly not; for pressure does not aggravate the suffering; there is neither jaundice, vomiting, nor hiccup; no sympathetic pain in either shoulder is experienced; and instead of there being any inability to lie on the left side, this is the only position-except standing upright -that can be borne.-" There must be inflammation of the lung then, or pleurisy." No, there can be neither; since the respiratory murmur is quite healthy; there is certainly cough, but no expectoration; and the pulse, though quick, is not hard like that of pneumonia or pleurisy .- "What is it then, which causes this dreadful torture?" The explanation is difficult; but it is probable that the pain is owing to the pressure of the ascending uterus interfering in some incomprehensible way with the liver. I say "difficult," "probable," and "incomprehensible" advisedly; because I have seen the abdomen occupied by tumours quite as large as the uterus at the full term, but have never found them give rise to similar acute symptoms.—However, whatever the nature of the affection may be, lying on the left side, hot poppy capsule fomentations, and the following medicine will give relief :-

R. Spiritûs Ætheris Chlorici, mxv; Spiritûs Ætheris Compositi, 5ss; Liquoris Morphiæ Hydrochloratis, mxx—mxxx; Aquæ Menthæ Piperitæ, 5iss. Misce. Fiat haustus statim sumendus; et repetatur post horas quatuor si paroxysmi discrucient.

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The practitioner may now leave his patient, feeling tolerably certain that she will enjoy a good night's rest. On the following day it will be quite time enough to get the alimentary canal cleared out by a full dose of mercury and chalk with rhubarb, or by a draught containing sulphate of soda and taraxacum, or by the administration of six or eight drachms of castor-oil. The morphia will very probably have to be repeated for the next few nights; a nutritious diet will necessarily be ordered, perhaps with stimulants; and the patient must be warned to seek immediate advice if the bowels again become constipated, or if the motions assume an unhealthy character .- Moreover, as long as a vestige of pain remains, she should be kept in bed, and directed to lie on her left side, so as to keep the uterine tumour as much away from the liver as possible. While there is any uneasiness, sitting up will assuredly increase it; since this posture brings the gland forward and downward on to the uterus.

CHAPTER XI.

THE DISEASES OF THE URINARY AND GENERATIVE ORGANS.

Section 1. Diseases of the urinary organs.—1. Incontinence of urine.

—2. Retention of urine.—3. Uramic eclampsia.

Section 2. Diseases of the generative organs.—1. Pruritus of the vulva. —2. Œdema of the labia.—3. Vaginal leucorrhœa.—4. Discharge of watery fluid from the uterus.—5. Dropsy of the amnion.—6. Rheumatism of the uterus.—7. Inflammation of the uterus.—8. Uterine hæmorrhage.

Section 1 .- DISEASES OF THE URINARY ORGANS.

1. INCONTINENCE OF URINE.—During the early months. the pregnant woman is often tormented with a frequently-recurring desire to pass water; and unless she be able to gratify this desire at once, the urine comes away involuntarily. In these cases, the incontinence is probably due to the congestion and irritation from which all the pelvic viscera, about this time, suffer, owing to the important changes taking place in the uterine cavity; or it may arise from the pressure which the uterus exerts on the neck of the bladder, before rising out of the pelvic cavity. Still more common, however, is incontinence at a much later period; when a temporary paralysis of the vesical coats may be induced by the pressure of the enlarged womb. The urine then very frequently escapes involuntarily, especially on coughing; and great distress ensues from the vulva and upper part of the thighs becoming excoriated by this secretion, as well as annoyance from the urinous odour which attaches to the patient.

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In the treatment of the first class of cases, only simple remedies will be required. A cure may not unfrequently be effected by the application of fomentations, and the exhibition of a dose or two of the extract of henbane; or sometimes by the administration of the extract of belladonna in half-grain doses twice a day. Mild laxatives must also be ordered if the bowels are not free. In the second instance we can only palliate the symptoms until the time of delivery. Frequent sponging of the vulva with cold or tepid water should be enjoined: the sufferer should empty the bladder very frequently, to prevent any accumulation and involuntary discharge of urine; and the upper part of the thighs, &c., should be protected from the excoriating effects of the secretion, by painting them with an artificial cuticle made of two parts of castor-oil to one of collodion. The practitioner must not forget that a very frequent desire to pass urine is one of the urgent symptoms of calculus. Hence if the secretion contain blood or mucus, or if immediately after micturition the desire to urinate still continues, the bladder should be carefully examined with the sound. It need hardly be added that if a stone be discovered, it must be crushed with a lithotrite and removed; unless, indeed, it be of a very small size, and then perhaps the urethra may be sufficiently dilated to get it away without any fear of bad consequences.

2. Retention of Urine.—The pressure of the uterus upon the neck of the bladder may be so great as to render the emission of urine difficult or even impossible. Dysuria may thus arise at any period of pregnancy: but it is most frequent towards the end of gestation, probably owing to the uterus then falling forwards with greater force, and so compressing the neck of the bladder against the margin of the symphysis pubis. Anteversion

and retroversion of the uterus also interfere with the normal performance of the functions of the bladder.

If the retention depends simply on the pressure of the womb, and the vesical coats have not lost their tone from long-continued distension, the bladder may be voluntarily emptied by the woman lying upon her back, with a bed-pan beneath the buttocks. But if this simple plan should fail, the catheter must be used. It has not very unfrequently happened, that from some error in diagnosis, the bladder has become so distended as to reach the umbilicus, giving rise to the greatest suffering. Of course rupture ultimately takes place unless proper treatment be adopted; and even if the urine be withdrawn, still there is no little fear of inflammation setting in, from the great irritation to which the bladder has been subjected.

3. UREMIC ECLAMPSIA.—The very gradual manner in which valuable pathological facts are brought to light is well illustrated by a consideration of the subject of the present section. Some fifty years have now elapsed since Hamilton first gave the clue to a correct recognition of the nature of puerperal convulsions, by showing that they were often preceded by the occurrence of anasarca during pregnancy. About 1840, Dr. Lever and Professor Simpson proved—as was to be inferred from the researches of Dr. Bright-that this anasarca was connected with the existence of albuminuria; and until the investigations of Dr. Braun, we really learnt but little more. Even now there is much to be done; and we have yet to ascertain, amongst other points, the various circumstances which give rise to the albuminuria and the retention of urea in the blood. That puerperal convulsions are not always due to actual renal disease seems certain, because we have two classes of cases in

which they occur—vir., those in which the albumen entirely disappears from the urine two or three days after delivery, and those in which it is permanent from structural disease of the kidney. Moreover, it must not be overlooked that very many patients suffer from albuminuria who never have any uraemic symptoms developed.

The term uramia is employed to denote a peculiar kind of poisoning, which is supposed to result from the accumulation of urea in the blood, and the transformation of this salt into carbonate of ammonia. The direct effects of this poisoning are seen in a disturbed action of the two great nervous centres-the brain and spinal cord. These centres may be affected either separately or together. Hence we have three forms of uræmic poisoning :- 1st. That in which a state of stupor supervenes rather abruptly, and from which the patient is aroused with difficulty. It is soon followed by complete coma, with stertorous breathing, as in ordinary poisoning from opium. 2nd. The variety in which convulsions of an epileptic character suddenly set in, often affecting the entire muscular system. Consciousness remains unimpaired. And 3rd. That kind in which coma and convulsions are combined.

Albuminuria occurs in every period of pregnancy, though it is rare before the fifth month. It is most common about the latter weeks, but sometimes only sets in during labour. When due to gestation—in other words, when there is no structural disease of the kidney—it generally disappears a few hours after labour is over.—The relative frequency of this state, according to the investigations of M. Blot, who analyzed the urine of 205 women taken indiscriminately in the wards of the Maternité, is one in five; that is to say, of the number examined, forty-one had albuminuria. I believe, wever, this proportion is somewhat higher than holds

in this country. Of the 205 cases, 106 were multiparæ, and the urine of 11 of these contained albumen : while 99 were primiparæ, and the secretion of 30 of this class was albuminous. Hence the proportion in multiparæ is, in round numbers, one to ten; whilst in primiparæ it is one to three .- During Dr. Collins' mastership at the Dublin Lying-in Hospital there were 30 cases of puerperal convulsions, and 29 of these were primiparæ.-The quantity of albumen varies. In one set of cases the urine presents all the characters which it assumes in acute desquamative nephritis; being scanty, of a dark smoky colour, of a high specific gravity, and loaded with albumen. In a second class, the secretion is found to be pale, of a low density, with its salts diminished, and having the characters of the urine in chronic desquamative nephritis, or in fatty degeneration of the kidney,

There is a great difficulty in accounting for the albuminuria of pregnant women. Many practitioners regard it as due to active congestion of the kidneys produced by the pressure of the uterus, and the mechanical obstacle which this compression necessarily opposes to the return of the venous blood. The most telling fact in favour of this explanation is the frequency of uramia in primiparae, in whom the abdominal walls are firm and resisting. Yet it is certain that this phenomenon is sometimes observed under circumstances, and at periods of pregnancy, when this explanation will not suffice; while it is not witnessed in the case of large ovarian tumours, the pressure of which is quite equal to that of the gravid womb at the full term. The real cause must be sought elsewhere. It has been very plausibly suggested—I believe by Dr. Barnes-that the albumen found in the urine is the result, and an indication, of the degradation of the mother's blood; which degradation is wrought, chiefly at least, by the obstruction of its healthy elements in the placenta, and the reception of the effete materials of the fœtus, discharged into it through the same organ. This view, though not entirely satisfactory, seems to me more reasonable than that of M. Blot, who gives as the probable cause a nervous irritation of the kidneys, sympathetic of pregnancy. Equally to be distrusted is the opinion of many that the cause is to be found in the restraint which pregnancy opposes, after a certain time, to the freedom of respiration. The upholders of this theory assert that modern chemistry teaches that the albuminous matters undergo in the blood, under the influence of the oxygen, a combustion which leaves two bodies of azote-urea and uric acid-to be eliminated by the urine; but if from any cause this combustion is interrupted, the albumen instead of coming away in the urine as urea, is passed unchanged. This results only in pregnancy in the same way as it happens in a certain number of pathological states accompanied by impeded respiration and circulation; as is seen in organic lesions of the heart, acute pneumonia, cholera, &c.—When the albuminuria is due to acute desquamative nephritis, or to fatty degeneration of the kidney, the occurrence of uterine congestion, placental apoplexy, and abortion is I believe more to be feared than the setting in of uramic convulsions. During the last twelve years I have myself attended seven women in labour, all of whom were suffering from true Bright's disease in a more or less advanced stage. Not one of these had any symptoms of uræmia at the time of delivery, or had previously experienced any; but four had aborted at an early stage of gestation, and one had even miscarried three times in succession. Another of these cases was also seized with convulsions three weeks after an easy labour, but gradually recovered; and she is still living in the enjoyment of moderate health, though her urine is loaded with albumen, and to my certain knowledge has been so for the last five years.

The uramic fits do not arise, as was formerly thought to be the case, from the blood being poisoned by urea. The views of Frerichs are confirmed by Dr. Braun: and it now appears highly probable that the phenomena of uræmic convulsions are not produced by urea nor any other ingredient of the urine, but that they commonly originate from the urea retained in the blood being transformed into carbonate of ammonia under the influence of some peculiar ferment. Hence can be explained those cases, where women suffering from Bright's disease pass through pregnancy and labour-their blood being saturated with urea-without any uramic phenomena taking place; simply because the unknown ferment, by means of which the urea can be changed into carbonate of ammonia, is absent. Frerichs states that he has proved by chemical analysis, the existence of carbonate of ammonia in the blood in all cases in which the symptoms of uræmia have been developed. He further observes that the two following propositions can be demonstrated beyond a doubt :- 1. That in every case of uræmia, a change of urea into the carbonate of ammonia takes place. 2. That the symptoms which characterize uræmia can all be produced by the injection of carbonate of ammonia into the blood.

The attacks of convulsions commonly appear for the first time during the last three months of gestation; or more particularly just before the process of parturition commences, or while labour is going on, from which circumstance they are often spoken of as "puerperal convulsions." They are frequently preceded by symptoms which should put the practitioner on his guard; the most prominent being headache, giddiness, various kinds

of illusions, noises in the head, marked mental depression, nausea and retching, languor, rigors, and weakness of the extremities. In addition to the albuminous state of the urine, the face, hands, and arms will generally be found ædematous; or this condition will chiefly affect the feet and ankles, or the labia majora. When the fits come on, they follow each other in rapid succession, being often repeated several times in the day; the patient being not only insensible during the paroxysm, but sometimes also in the interval. The duration of each fit, inclusive of the stage of convulsious and that of coma, varies from half an hour to two or three hours, or even louger. As the symptoms remit, consciousness gradually returns; a confused dull headache is complained of; but there is no recollection of what has happened. It is quite certain that eclampsia may appear quite independently of uterine pains. The fact has been observed by many that the fits may cease and pregnancy go on safely for weeks until the proper period of parturition arrives; or even if pains have set in, they may go off for one or two days. Yet it must also be allowed that spontaneous premature labour is not uncommon with eclampsia.

The life of the fœtus is much endangered by the attacks of convulsions. It is quite exceptional for the fœtus to be found alive after numerous paroxysms. Dr. Braun says:*—

"The cause of death of the fectus of eclamptic mothers is, for this reason, chiefly to be sought for in the passage of carbonate of ammonia into the feetal circulation. But the ursemia itself of the mother may, without eclampsia occurring, destroy the feetus, as we have observed in acute Bright's disease of pregnant women without eclampsia. Besides the ursemic poison-

^{*} The Uramic Convulsions of Pregnancy, Parturition, and Childbed. By Dr. Carl R. Braun, Professor of Midwifery, Vienna, p. 48. New York, 1858. Translated by Dr. J. Matthews Duncan, from the Lehrbuch der Geburtshülfe mit Einschluss der operativen Therapeutik, der übrigen Fortpflanzungs-functionen der Frauen und der Puerperal-processe. Wien, 1857.

ing of the blood, other injurious influences may endanger the life of the fectus, as interruption of the placental circulation by violent pains, in cases where insuperable difficulty is produced by transverse presentations, disproportion in size, pressure on the cord, premature discharge of the waters, and deficient preparation and softening of the neck of the womb. Albuminuria and Bright's disease of the kidneys of children, born of eclamptic mothers, have been observed by Simpson. We have not unfrequently observed apoplectic masses in the cavity of the skall and spine in cases of children dying of convulsions in the first days of life."

When the mother dies during pregnancy from eclampsia puerperalis the result of uræmic toxemia—in other words, from convulsions caused by the action of morbid blood on the brain, spinal cord, and medulla oblongata—and the Cæsarean section is immediately performed, the infant will almost always be found dead.

Uræmic eclampsia may be distinguished from other convulsive diseases by the albuminous state of the urine, by the ædematous infiltrations of the face or extremities which are generally present, and by the precursory nervous symptoms which have been already alluded to. It is likely to be confounded with cholæmic eclampsia; an acute disorder which arises from the blood being overcharged with the constituents of the bile and the products of their decomposition, and which is connected with acute atrophy of the liver, icterus typhoides, pyæmia, and puerperal diseases. But in this case the urine does not contain albumen, and is charged with biliary pigment, as may be ascertained by the usual simple test with nitric acid. So also hysterical convulsions may occur, but they have no injurious effect on the mother or child: women afflicted with epilepsy may have the fits recur during pregnancy: there may be convulsions originating in meningitis, encephalitis, apoplexy, or tuberculosis of the membranes of the brain: and there may be the same from the ingestion of poisonous substances, such as strychnine or brucine. But the simple fact that in these cases all uramic symptoms are wanting is sufficient to prevent their being mistaken for convulsions due to poisoning of the blood with carbonate of ammonia.

The prognosis in eclampsia must always be gnarded: since hitherto, according to Braun, thirty per cent of the cases have proved fatal. The greater the difficulty in diminishing the volume of the uterus, the greater is the danger. The fits have been found to cease completely after evacuation of the uterus in thirty-seven per cent., to become weaker in thirty-one per cent., and to continue of the same severity in only thirty-two per cent. The case may be said to assume a favourable aspect when the fits diminish in frequency and violence, when the pulse continues quiet and of its natural strength, when there is abundant diuresis, when all comatose symptoms disappear, and when no secondary disease of the brain or lungs has been produced. It is fortunately true that when convulsions have occurred in one pregnancy, it is only rarely that they happen in subsequent gestations.

If the foregoing hypotheses, on which so much stress has been laid, are well founded, and I know of no good reasons for doubting their correctness, the indications for treatment are clear and simple. When the existence of albuminuria is discovered during pregnancy, medicines should be administered which will prevent the decomposition of the urea, or rather will neutralize the carbonate of ammonia if it be formed in the blood. For this purpose Frerichs strongly recommends benzoic acid in five or ten grain doses, with iced drinks which have been acidulated with tartaric acid, lemon-juice. To obviate congestion of the head, costiveness should be prevented by assafætida and vinegar injections, by jalap, calomel, or croton oil; while ice may be also used locally, or the cold douche may be cautiously tried if any cerebral symptoms actually show them-

selves. In the cases which have come under my own observation great benefit has been derived from the early employment of tonics, and particularly from the cautious use of steel with the mineral acids. When convulsions have occurred, or when a paroxysm seems impending-during either pregnancy, labour, or childbed-chloroform is invaluable; since its inhalation weakens the fit, and diminishes the reflex excitability of the nervous system. Moreover, Dr. Simpson has very ingeniously suggested that the beneficial effects of this anæsthetic are due to its producing-as it is well known to do-a temporary diabetes mellitus; for it has been demonstrated that sugar in small quantities added to the urine out of the body prevents for a time the ordinary decomposition of urea into carbonate of ammonia.

Dr. Braun states, that in sixteen cases of eclampsia, occurring in succession, which he treated with chloroform and acids, complete recovery always took placea result which is much more favourable than has hitherto been obtained by any other course of remedies. With regard to my own experience it may be mentioned that since I became acquainted with the views here advocated I have met with three examples of puerperal convulsions. In the first of these the patient was skilfully and successfully treated by another practitioner, who simply hurried the labour and delivered. second instance pregnancy was only advanced to the eighth month, and a cure was effected by keeping the woman under the influence of chloroform for an hour at a time, on three separate occasions, at intervals of twelve hours; together with the liberal administration of lemon juice. After the last inhalation the convulsions permanently ceased; and delivery took place at the proper time of a live child. With regard to the third case, labour had well set in, and the os uteri was almost fully dilated when the convulsions commenced. The forceps were, therefore, readily applied, and a living child was brought into the world; the mother making a good recovery.

The last, but certainly not the least important remedy, is the prompt removal of the contents of the uterus. This must be accomplished either by the use of the forceps, or by turning, if the convulsions occur during delivery at the full term; or by the induction of premature labour, if the dangerous symptoms of uræmia take place in the latter months of pregnancy. Supposing that there are indications of the death of the fœtus. there can be no doubt that the sooner the infant is expelled the better. After emptying the uterus, it will be advantageous to continue the administration of the benzoic acid, so as to prevent any return of the paroxysms; while opium may be freely given to procure complete repose of both body and mind. In all instances, Dr. Braun asserts that general depletion does mischief; because by bleeding the anæmia is increased. the nervous fits are not improved, the spasms are often aggravated, and puerperal thrombosis and pyæmia in childbed are much to be feared. My own observations of this disease at the present day quite confirm this opinion; and I have no hesitation in expressing my belief that bloodletting, as a general rule, without exerting any valuable effect on the symptoms, is often calculated to produce irreparable mischief. With regard to the application of blisters to the back of the neck, sinapisms to the legs, hot pediluvia, and such like, it is only necessary to say that they cannot possibly do any good. When a comatose condition supervenes, the patient is to be kept perfectly quiet; and abundant diaphoresis is to be encouraged by the wet sheet, hot

bottles, blankets, &c. No medicine need be given. It must be remembered that the coma is not due to congestion of the brain with blood, but chiefly to uræmia; and, perhaps, sometimes to slight serous infiltration.

Section 2.—Diseases of the Generative Organs.

1. PRURITUS OF THE VULVA.—Few affections are more annoying in the early periods of pregnancy than an excessive itching of the external genital organs. The insupportable irritation, the continual scratching which is resorted to for the sake of temporary relief, and the consequent excoriations which are produced, all give rise to so much local and constitutional distress, that sensitive women are sometimes rendered thoroughly ill and miserable. In a few rare cases, the attack has degenerated into nymphomania; the impure desires being at first excited by the friction resorted to for the alleviation of the itching.

The causes of pruritus pudendi are numerous. Thus it may be merely a sympathetic disorder, unattended with any cognisable alteration of tissue. It may be simply a symptom of inflammation of the follicles of the mucous membrane of the vulva. Dewees states in his work on midwifery that he examined a lady who was attacked early in pregnancy with an intolerable itching in the pudendum and along the vagina, and on separating the labia he found all the parts covered with an incrustation of aphthæ; which disease was thoroughly cured in twenty-four hours by the repeated application of a strong solution of borax. Again, it may result from the irritation produced by acrid vaginal discharges; and especially by leucorrhæa due to excoriation

of the labia uteri. Or the presence of ascarides in the rectum may give rise to it. And lastly, in dirty women, it may be due to the presence of the pediculus pubis, or crab louse; a parasitic insect which occa-

sionally infests the hair of the pubes.

The characteristic feature in all cases is the constant and intense itching. If the patient have suffered for any length of time, and have resorted to frequent scratching, ulcerations about the labia may be found. There is generally great restlessness at night, loss of appetite, constipation, mental depression, and some emaciation.-The itchings are not always confined to the genital parts. Thus Dr. Maslieurat-Lagémard has related the remarkable case of a lady, who, in eight successive pregnancies, was afflicted with itchings so violent as to produce premature labour.* On four of these occasions the irritation began in the sixth month, twice at eight months and a half, and twice in the seventh month. It spread over the entire cutaneous surface; the whole trunk, neck, face, scalp, thighs, legs, and genitals being all affected. So severe was the suffering, that the violent rubbings which were resorted to produced extensive excoriations; though except for these abrasions, the skin appeared perfectly healthy. Simple and alkaline baths; ammoniacal and camphorated frictions to the spine; preparations of opium, bismuth, valerian, hyoscyamus, and belladonna; and lastly, general bleeding, were all employed without any advantage. But almost immediately after the uterus had expelled its contents, the symptoms vanished.

The treatment of these cases must vary according to the cause of the affection. When it is merely symptomatic of pregnancy we shall often fail to do more than

^{*} Gazette Médicale de Paris. Tome Troisième, p. 204. 1848.

give partial relief. In such, the bowels should be regulated by some simple aperient, as rhubarb and magnesia, or sulphate of soda and taraxacum; while sedative lotions are freely applied locally. With regard to the latter remedies, I have often found one of the following forms prove useful :-

B. Liquoris Morphiæ Hydrochloratis, 5j; Acidi Hydrocyanici Diluti, 5iss; Aquæ Sambuci ad 5viij. Misce. Fiat lotio sæpe utendum.
B. Liquoris Potassæ, 3ij; Acidi Hydrocyanici Diluti, 5ss; Misturæ Amygdalæ ad 5viij. Misce. Fiat lotio.
B. Acidi Tannici, 5iij - 3vj; Aquæ Destillatæ, 5viij. Misce.
B. Liquoris Plumbi Diacetatis, 5ss; Extracti Opii, 3j; Aquæ Destillatæ ad 5viij. Misce.
B. Sodæ Biboratis, Siss—Siv; Glesevicii, Fiid Aqua Pormed Friii

B. Sodæ Biboratis, 5iss—5iv; Glycerinii, 5ij; Aquæ Rosæ ad 5viij. Misce. This form is peculiarly useful in aphthæ of the vaginal mucous

Ointments are generally more objectionable than lotions, inasmuch as they are dirty applications, and are usually injuriously affected by heat. But sometimes it may appear useful to employ a soothing cerate, and then one resembling either of the following may be tried :-

B. Acidi Hydrocyanici Diluti, Ziij; Extracti Opii, Dj; Cerati Plumbi Compositi ad Siv. Misce. Fiat unguentum, cujus paululum pro re nata applicatur, urgente prurigine.

R. Bismuthi Nitratis, 3j; Unguenti Sambuci, 3iv. Misce.

Patients have also stated that they have been relieved by the use of the Unguentum Hydrargyri Nitratis Mitius: by astringent lotions containing nitrate of silver, nitric acid, alum, sulphate of zinc, or sulphate of copper: by washing the parts with lime water, or icecold water, or with a lotion formed of equal parts of the Liquor Hydrargyri Bichloridi and water, or with vinegar and water: and by the employment of tepid hip-baths, made alkaline through the addition of carbonate of potash. In one case where the incessant and intolerable itching appeared to be entirely due to congestion and granular abrasion of the lips of the uterus, I effected a

cure by the use of three leeches to the diseased surface, and the subsequent rather frequent application to the same part of a thick mixture of starch and extract of opium rubbed down in a little distilled water. With regard to the internal administration of drugs, I can only say that their use has almost invariably disappointed me. Knowing the great value of arsenic in many cutaneous affections, I at one time anticipated a good result from its employment in pruritus; but my hopes were never realized. Such also has been the case with alteratives, the mineral acids, sarsaparilla, purgatives, and narcotics; which have all failed to do any marked good in my hands. It only remains to notice that if ascarides be present in the rectum they must be removed by enemata consisting of salt and water, or of a strong infusion of quassia; while if any pediculi are found they must be destroyed by freely dusting all the parts with calomel, and their return prevented by repeating the application as well as by frequent ablutions with soap and water.

2. ŒDEMA OF THE LABIA.—During the last two or three months of gestation the external labia sometimes become cedematous, and occasionally they get enormously distended with serum. This condition must be carefully distinguished from the general dropsical effusion which is often found co-existing with albuminuria.

A simple cedematous state of the labia is supposed to be due to the pelvis being sufficiently large to allow of the gravid uterus sinking more or less deeply into its cavity; the pressure thus exerted upon the veins impeding the return of blood. It is to be relieved by the recumbent posture being kept, with the head and shoulders as much on a level with the trunk as may be bearable; and this failing, by the exhibition of purga-

tives, by bathing the parts with warm water, and—if necessary—by making a few punctures with a sharp needle.

3. VAGINAL LEUCORRHEA.—There are very few diseases of the uterus or vagina which are not accompanied by a leucorrheal discharge, more or less profuse. As a general rule. I believe the most common cause of severe leucorrhœa to be disease of the mucous membrane of the os and cervix uteri. But in the remarks now about to be made I wish to confine my observations to that variety of vaginal leucorrhœa which often affects pregnant women, particularly during the three or four latter months of gestation; and which resembles that form of discharge which so commonly occurs after each menstrual period, in which the increased secretion of mucus is attended with a partial desquamation of the epithelial surface of the vagina. The fact must be remembered that the mucous membrane of this canal is covered with a layer of pavement epithelium, beneath which are countless villi, and numerous mucous glands. These are the structures most concerned in producing the discharge under consideration; and it is astonishing to see the quantity of muco-purulent fluid which the villi or papillæ will secrete when they are denuded of epithelium. The cause of this desquamation appears to be some constitutional change or peculiarity acting with the pregnant uterus to produce irritation or relaxation of the vaginal tissues.

This affection often produces much annoyance. When the discharge is copious it weakens the system, and seems particularly to interfere with the due performance of the functions of the digestive organs. It may sometimes perhaps appear that dyspepsia is the cause and not the result of the disorder; but often, as mentioned, the contrary is the case. This is proved by the fact, that on relieving the vaginal affection by local remedies, the stomach regains its tone. Moreover, the discharge is liable to set up great irritation, a burning heat, and itching about the external genitals; and unless great cleanliness is practised, the secretion forms slight crusts with the matted hairs, excoriations are produced, and then even walking becomes a painful act.

The treatment which I have found most useful and grateful consists in the employment of a tepid hip-bath every morning, or even night and morning; complete abstinence from sexual intercourse; plenty of rest in bed, on a mattrass, with only moderate coverings; a regulated but nutritious diet, without any stimulants; and the proper employment of simple injections. The injection which I most frequently order is made by adding three or four drachms of the Liquor Plumbi Diacetatis to twelve ounces of water; the whole of this being directed to be gently used twice a day by means of the small vulcanized india-rubber syringe. At the same time mild laxatives containing taraxacum, or rhubarb and magnesia, may be prescribed; and a course of tonics will often do good, especially if there exist any constitutional debility. Small doses of the nitro-muriatic acid with compound tincture of bark often prove very beneficial; or if there be no contra-indicating conditions, a combination of iron and alum will be found useful. The following will be found a good form :-

B. Ferri Ammonio-Sulphatis, Đij ; Aquæ Destillatæ, 5vj. Fiat misturs, de quâ capiat æger cochleare unum amplum ter quaterve in die.

The Sand-rock chalybeate water, in the Isle of Wight, which has long been noted for its efficacy in curing many chronic forms of uterine disease, owes its valuable properties to the large proportion of sulphate of iron and sulphate of alumina with which it is impregnated.

But in this case the two salts are simply dissolved in the water; there being no chemical combination. Such a mixture is much less efficacious than the true iron alum; which indeed contains no alumina at all, but consists simply of a double sulphate of ammonia and iron. There is, it may be noticed, another preparation consisting of a double sulphate of potash and iron; but as this is less soluble than the iron alum with ammonia, it is better to employ the latter.

4. DISCHARGE OF WATERY FLUID FROM THE UTERUS. -It sometimes-though very rarely-happens that pregnant women suffer for many weeks before labour from a profuse, colourless, limpid, watery discharge; the fluid which comes away resembling in all respects the liquor amnii. The terms hydrorrhæa and metrorrhæa have been used to designate this affection by German and French obstetricians. The quantity of water expelled varies from some ounces to a few pints daily; and it may continue for a few days and then cease, or it may recur at intervals, as most frequently happens, until the end of pregnancy. Moreover, it comes from the patient either in gushes or it dribbles away, perhaps ceasing when the recumbent posture is assumed; it is attended with weakness, and troublesome lumbar pains; there is only slight, if any, diminution in the size of the abdomen produced by it; and it does not appear to have any injurious effect upon fœtal life, since the child is usually born alive at or near the full time.

The question of the source of this discharge has given rise to a variety of opinions; but it is generally thought to be due to the evacuation of fluid which has collected between the amnion and chorion, or between the chorion and the decidua. Dr. David Davis observes that this is, "in most cases, a dangerous and often a

fatal affection of the pregnant state; but I cannot find any author of note who corroborates this statement. The same gentleman seems also to believe that this dribbling of the waters can possibly be due to what may be called a dropsy of the chorion; the chorion taking upon itself to secrete fluid just as the amnion does.*

Dr. Harvey, of Dublin, in considering these cases, reasons by the method of exclusion, and shows the great improbability or even impossibility of the fluid coming from the cervical glands of the uterus, or from the vagina, or from the space between the decidua and the chorion, or from the interval between the chorion and the amnion. Hence he thinks that the conclusion is almost inevitable that the amnion must be the source of this flood; solutions of continuity probably occurring in this membrane from time to time, so as to allow of these discharges. The openings then either close again, or else the mechanical relations of the bag to the surrounding parts admit of the amnion refilling to a certain extent by a fresh secretion of its peculiar fluid. In confirmation of his views he refers to cases recorded by Denman, Burns, and others, where the amnion is said to have given way from fright, and in which the waters were discharged without labour coming on; and he then relates the following interesting example where the flow was undoubtedly amniotic :-

[&]quot;Mrs. —, mother of several children, was, for more than a year, the subject of heavy sanguineous discharges, which were so little influenced by the treatment adopted that the existence of polypus was thought possible. An examination revealed considerable congestion of the os and cervix uteri, with superficial ulceration, which gave way to treatment generally and locally applied. During last summer her health was considerably improved; but occasionally menorrhagic attacks, which latterly observed more or less closely the monthly periods, showed themselves. Matters were going on thus when she suffered a considerable shock by her eldest boy meeting with a severe accident, in which his arm was fractured. On that day, for the

^{*} Opus jam citat. Vol. II., p. 903.

first time (six weeks before delivery), she had a sudden gush of clear watery fluid from the vagina, and since that time to the date of these notes (5th November), she was scarcely free from it; it would diminish or nearly stop for a few days at a time, to come on again in gushes, and in considerable quantity. The quantity escaping in one of these was seldom less, and generally more, than half a pint; and on the late occasion, when the flow was accompanied by a heavy sanguineous discharge also, she thinks the combined amount was fully a quart. It came on in the horizontal position as well as in the erect, and apparently without any cause. The size of the abdomen did not app ar much affected by these at any time .-The occurrence of the watery discharge suggesting the probability of pregnancy, notwithstanding the menstrual changes which had been going on with some regularity, and that, if pregnancy did exist, the orum might have suffered hydatid degeneration, I proposed an examination for the purpose of ascertaining the point. I found an abdominal tumour occupying the hypogastrium to above the umbilicus, and on laying my hands over its surface, it gave a good example of the value of a diagnostic indication lately suggested by Dr. Oldham; it afforded distinct evidence of its being uterine by gradually and regularly hardening under my hand. The move-ments of the child were also felt; and feetal pulsation distinctly heard by the stethoscope, put an end to all doubts.—I told the lady that she had passed some six or near seven months of her pregnancy without being aware of it, and that her labour would probably come on prematurely; all of which she entirely disbelieved, and I could not induce her to make the necessary preparations. Two days after, I was called to her—the first stage of labour having set in with unusual distress and irritation; the pains peculiarly sharp and unbearable; the os uteri was hard and unyielding, and the breech, presenting in the second position, was felt in close contact. I immediately put her on antimonial solution, notwithstanding which the os uteri took over three hours to relax. After a first stage of about four and a half hours, and a second of less than half an hour, a male child, of scarcely seven months' growth was born. The presenting hip and buttock were perfectly black, evidently from the direct pressure to which they had been subjected in consequence of the loss of the liquor annii. None whatever escaped with the child, and the sanguineous discharge was also unusually scanty. I do not think I ever witnessed so dry a labour."*

From a careful consideration of the foregoing facts and of the other recorded cases, I cannot avoid coming to the conclusion that they all tend to support the view that the escaping fluid is the liquor amnii. There are three circumstances which, as it seems to me, especially favour this view. They are these:—First, an opening has been found in the membranes through which the fluid has escaped. Thus Mr. Ingleby relates the case

^{*} The Dublin Quarterly Journal of Medical Science, Vol. XXV., p. 233. February, 1858.

of a lady, six months gone in her third pregnancy, who suddenly lost a large quantity of water during the night. From this moment, until the occurrence of labour, there escaped every two or three days a pint and a quarter of fluid. The patient was at length delivered of a large The after-birth was expelled spontaneously; "my hand"-says the narrator-"receiving the mass when at the outlet, lest its weight should tear the membranes. I then carefully examined the whole, and in addition to the aperture in the centre of the membranes, made by the passage of the head, there was a circular one very distinct just at the edge of the placenta. From this aperture doubtless the fluid had from time to time escaped; the patient prior to each evacuation being sensible, by a kind of passive contraction of the uterus, that it was about to come away."* Secondly, the discharge often ceases directly the patient lies down, as it would naturally do, were the opening situated in the upper and front part of the amniotic sac. And thirdly, it is well known that even the whole of the liquor amnii may escape many days before labour without compromising the life of the fœtus. Mauriceau refers to some few instances where even two or three weeks seem to have elapsed between the rupture of the membranes and the setting in of labour pains; and I have myself very recently attended a lady where the whole of the liquor amnii was discharged sixty hours before the birth of a vigorous healthy child.—It must be confessed, however, that the opinion here advocated is not that which is generally held. On the contrary, very many will be found to agree with M. Chassinat, who has lately published an elaborate essay upon this

^{*} A Practical Treatise on Uterine Hamorrhage, in connexion with Preynancy and Parturition. Note, p. 29. London, 1832.

subject, founded upon forty-two cases which he has collected from various authors, and ten examples not hitherto published. Although this author's reasonings appear to me quite untenable, yet it is but fair to refer the reader to his papers on the subject.* The conclusions at which he arrives are as follows:—

"1. The metrorrhoea of pregnant women, appearing at variable periods in the course of pregnancy, is an affection of the reality of which no doubt can be entertained. 2. In the great majority of cases, if not in all, the liquid is secreted between the internal surface of the uterus and the envelepes of the foctus after detachment of the membranes. The differential characters suffice to distinguish it from the waters of the amnios, discharged by reason of the premature rupture of the membranes. 3. The causes which seem to favour this abnormal secretion are a general polysemia, or local irritation of the uterus, supervening in several cases upon external violence.

4. The pathognomonic symptom is the issue of a fluid from the vulva, which is usually limpid, thin, and albuminous; and which may or not be accompanied by painful uterine contractions. 5. There is no anatomical lesion known which is peculiar to the disease. 6. In the great number of the cases, the metrorrhoea is dangerous to neither mother nor child, pregnancy going on to its normal term, the liquor amnii being as abundant as usual, and delivery proving neither longer nor more laborious. 7. As a general rule no treatment is required. If general plethora prevails, bleeding may be resorted to. With rare exceptions, the pregnancy should be left to itself, and the labour allowed to terminate by the sole efforts of Nature."

Notwithstanding that various authors differ as to the origin of this affection, yet all agree as to the treatment which it demands. This is exceedingly simple. It consists mainly in the avoidance of all moral and physical excitement, and in the adoption of perfect rest in the recumbent posture until after the discharge has quite ceased for several days. If there are any symptoms of uterine contractions setting in prematurely, a dose of morphia or of solid opium should be administered; or an opiate enema may be prescribed.

5. Dropsy of the Amnion.—Having already alluded to the occurrence of this singular affection, and having

^{*} Gazette Médicale de Paris. Nos. 29, 30, 39, 41, 43, 47, et 49.

made some observations on its cause and diagnosis, it is now only necessary to offer a few remarks on the symptoms which it gives rise to, and the treatment which they demand.*

The symptoms are chiefly such as may be produced by any circumstance which gives rise to great distension of the abdomen. The patient suffers so much inconvenience from moving about that she is often compelled to keep in bed; and being unable to lie down, is obliged to be propped up with pillows. She has also alarming attacks of palpitation and dyspnæa; fits of fainting frequently occur; there is great mental depression and prostration of the vital powers; the stomach is very irritable, so that the sufferings are greatly aggravated by repeated attacks of vomiting; and there is a scanty secretion of urine, though the calls to micturition may be very numerous and urgent. The uterus soon acquires a remarkable volume, being often more distended at the fifth or sixth month than it is at the full term in normal gestations; while fluctuation, with an appearance of undulation, can often be detected by palpation. Of course the increased size of the womb will depend upon the quantity of liquor amnii secreted; but six or eight pints is sufficient to produce considerable inconvenience, though authors relate cases in which thirty, forty, and even fifty pints have existed in the amniotic cavity. Several instances have been related where there was almost complete asphyxia, as indicated by nearly total cessation of the respiration, inability to feel the pulse, and lividity of the features. It is strange to find such urgent symptoms produced in these cases of dropsy, when perhaps the womb is not larger than it is at the ninth month. But there are I believe two circumstances which explain this

^{*} See Chapter III., p. 65.

anomaly. First, the blood is not in a healthy condition; as is indicated by the ædema which exists, and by the albuminuria which will often be found to be present. Secondly, owing to the sudden and rapid development of the uterus, the abdominal walls have not had time to yield; so that instead of the uterus being able to project in front, it is forced backwards and upwards against the diaphragm.

In one case the distension of the uterus was so great, the diaphragm was pushed up so high, the respiration was so greatly interfered with, and the abdomen was such a remarkable size, that although gestation had only advanced to the seventh month the woman's life appeared to be very seriously endangered. Some diversity of opinion existed amongst the physicians in attendance as to the best means of inducing labour: the difficulty being at length solved by a determination not to interfere until the os uteri evinced a tendency to dilatation. It soon became clear, however, that unless relief was afforded the patient would die of suffocation; and therefore the practitioner who had the responsibility of the case very properly ruptured the membranes. By keeping his finger in the os uteri he so regulated the discharge of the liquor amnii that only a portion came away at a time; but at the end of two hours fourteen pounds had been collected in basins, and an uncertain quantity lost in the bed. All the distressing symptoms-including the dyspnæa, vomiting, and cough-immediately disappeared, while the ædema of the extremities began to diminish; but as the uterus appeared incapable of contracting, the cervix was dilated, and a living infant brought away by the forceps. The child was puny and feeble, and its limbs were very small. In six weeks the patient was quite restored to health; and in two years she again became pregnant,

and went through the process of parturition in a natural and satisfactory manner.

The consequences of this state to the fœtus are often very disastrous. Either it perishes, and the pregnancy spontaneously terminates prematurely; or the infant when born at the proper time is small and feeble, so that not unfrequently it only survives its birth a few hours. The labour is very likely to be tedious; while the act of delivery may be followed by serious flooding, owing to the uterus having partially lost its tone and contractile powers .- A remarkable circumstance in these cases, pointed out by MM. Bunsen and Kill, is that the fœtus is often dropsical: sometimes being affected with ascites, and sometimes with hydrocephalus. The latter gentleman has also remarked that the placenta is often remarkably large: in one case especially which ended at the sixth month. this organ being one-third larger and double the thickness of an ordinary placenta at the end of the ninth month.

In the treatment of this malady medicines will be found to have no effect. Many attempts have been made to impede its progress by diuretics and drastic purgatives; but such remedies have proved worse than useless. All that the practitioner can do, is to support the patient's strength by nourishing food and tonics; to keep the mind and body tranquil; and if the distress be great, to induce premature labour by rupturing the membranes. Care must be taken to prevent exhaustion during a tedious labour; and the occurrence of hæmorrhage should be guarded against by the administration of one or more full doses of ergot, as well as by the proper employment of pressure after the birth of the child.

^{6.} RHEUMATISM OF THE UTERUS .- This affection

may occur alone, or it may exist in combination with rheumatism of other tissues. It is not common: it is more frequently met with towards the end of gestation, than at any other period of pregnancy: it is doubtless often the cause of uneasiness which is mistaken for false labour pains: and it arises from all those circumstances which are favourable to the development of rheumatic affections generally, especially in such women as are constitutionally predisposed.

The symptoms consist chiefly of pain in a portion or the whole of the uterus; increased by pressure, rendered very distressing by the movements of the fœtus, and varying in severity from a simple feeling of heaviness to an annoying dragging sensation. There is a frequent desire to empty the bladder, the passage of the urine sometimes causing severe smarting sensations; and the rectum sympathizes with the uterus, giving rise to There is usually also a certain amount of constitutional disturbance, such as fever, thirst, agitation, restlessness, and-towards the end of the attackprofuse perspiration. When the rheumatic pains are very severe, uterine contractions may ensue, and premature delivery will be induced: but this latter occurrence very seldom happens, owing probably to this circumstance,-that whereas in natural labour the contractions commence at the fundus and terminate at the lower segment of the uterus, in rheumatism they commence at the painful point, and are only irregularly propagated towards the cervix.-Lastly, an attack of rheumatism at the period of parturition generally retards the progress of the labour; it renders the uterine contractions very painful from the commencement; and it is sometimes the cause of flooding after the expulsion of the child and placenta, owing to its influence in preventing perfect uterine contraction.

The treatment of this affection is not difficult; opium, bicarbonate of potash, sudorific drinks, warmth, and perfect rest generally sufficing to effect a cure. An opium or belladonna plaster applied over the abdomen will sometimes be found useful. The diet should be nourishing, but free from stimulants; and the bowels should be kept regular by mild antacid laxatives, to which it may sometimes be useful to add a little colchicum.

I have heard it suggested that in a severe case the injection of carbonic acid gas into the vagina might give relief, and could do no harm. I should not recommend its use, however, for it could only give temporary ease, and might do permanent mischief. The following case—related by Professor Scanzoni*—shows that the injection of this agent into the uterus may be fatal; and although there would, of course, be much less risk in only applying it to the vagina, yet an accident might' happen. The chief points in the history are these:—

A young pregnant woman was about to undergo amputation of what we thought an hypertrophied cervix uteri; which protruded out of the value in the form of a bluish, chinky tumour, of the size of a small apple. The attending physician—the father of the patient—not thinking she was pregnant, insisted upon having carbonic acid injected into the cavity of the uterus, preparatory to the operation, with the view to prevent too profuse a hamorrhage (!). This injection was made by means of a suitable apparatus; but hardly had some cubic inches of gas penetrated into the cavit, when the patient screamed, and said that she felt the air rushing into her abdomen, neck, and head. General tetanic convulsions supervened; then a long agony, followed by death at the end of nearly two hours. At the autopsy no other lesion was found to which death was attributable, but a very considerable edema of the lungs. The uterus contained an uninjured ovum of about four months.—The question arises, was the death due to the poisonous qualities of the carbonic acid? or could the gas have penetrated into the orifice of an open vein, and have acted like air introduced into the veins?

In some severe examples of rheumatism of the uterus it has been deemed expedient to bring on premature

^{*} Beitrage zur Geburtskunde und Gynackologie. Band III., p. 181. Würzburg, 1858.

labour: but the necessity for such an extreme proceeding can very rarely arise.

7. Inflammation of the Uterus.—Acute inflammation of the unimpregnated womb is admitted by all observers to be a very rare affection, and one which seldom endangers life even when it does occur. But I believe metritis during pregnancy to be a still more uncommon ailment; so that had I not met with one undoubted instance which ended in suppuration, I should perhaps have been inclined to agree with those obstetricians who altogether deny its occurrence. It is, without doubt, quite certain that an extensive practice may be carried on for several years without an example of inflammation of the pregnant uterus being met with; but I regard it as an equally established fact that the disease does occasionally manifest itself.

The seat of the inflammation, speaking generally, is the muscular tissue; the peritoneum and the lining membrane being seldom involved. The more advanced the pregnancy, the more limited is the morbid action: the entire organ with all its tissues being only very rarely affected, and then only in the first two or three months. The disease frequently assumes an erysipelatous type; and may arise from some deterioration of the blood, from cold and damp, from mechanical injuries, or it may spread from neighbouring organs-as in instances of cystitis, ovaritis, dysentery, &c. The starting-point of the affection may be an exaggerated degree of congestion of the uterus. This latter condition may doubtless result from general plethora; but usually it is probably otherwise, since it is most commonly witnessed in nervous women suffering from anæmia or perhaps even from albuminuria. Such a circumstance will not appear surprising, when it is remembered that

these females are precisely those who most often are afflicted with hæmorrhoidal discharges, or who have abundant catamenial flows when not pregnant. The chief symptoms of uterine congestion are, a feeling of tightness in the abdomen and of weight in the pelvis: together with pains in the loins and groins. The upper part of the thighs may be also the seat of a dull sense of uneasiness, which is augmented by standing and by efforts at defæcation. Moreover, micturition is frequent; and some slight uterine contractions are often felt. If pregnancy is too little advanced for the woman to have perceived the fœtal movements, the appearance of these will be retarded; or if they have been already manifested, they diminish in frequency, and even cease entirely. At length, perhaps, a slight flow of blood takes place from the vulva. The consequences of this condition may be very grave; since, in addition to the chance of its terminating in metritis. it has likewise an influence in developing copious haemorrhage and premature contractions. The results to the product of conception are also dangerous; ingsmuch as it may not only be the cause of engorgement or apoplexy of the placenta, but, according to some observers, may give rise to deformity by producing compression and contraction of the fœtal limbs.

The constitutional symptoms of metritis are much the same as those produced by inflammation of other important viscera; chiefly consisting of a feeling of general discomfort, heat of skin, quickness of pulse, restlessness, loss of appetite, great thirst, nausea and vomiting, &c. When only a limited portion of the uterine walls is affected, the prominent local symptom will be excessive sensibility of this part; the tenderness being exasperated by pressure, as well as by the active movements of the fœtus. If the disease attack the

lower segment of the uterus, the bladder will be sympathetically affected; and the patient will be tormented with a frequent desire to micturate. Moreover, complaint is usually made of a sense of weight and bearingdown, of great pain in the back and thighs, and of a feeling of heat and throbbing above the pubes. In the case which came under my own observation there were attacks of pain coming on in paroxysms, and lasting for half an hour, the intervals having a duration of eight and twelve hours. The paroxysmal exacerbations were exceedingly severe, and indeed were only at first relieved by chloroform, which was eagerly inhaled. Full doses of opium and ether afterwards mitigated the suffering, and appeared to obviate the risk-which was really considerable-of miscarriage. On examining per vaginam there was found increased heat, great tenderness of the cervix, and enlargement of the vessels which could be felt rapidly and strongly pulsating.

The consequences of metritis setting in during gestation may be very serious. If the disease be limited, as well as early and completely cured, both mother and fœtus may escape unharmed.—The termination of the inflammation in resolution, cannot, however, always be obtained; and perhaps the next best result to be expected is the effusion of lymph. Yet it must be remembered that if the inflamed part coincide with the seat of implantation of the placenta, the effect of the pouring out of coagulable lymph may be to cause unnatural adhesion of this organ to the uterine walls; in which case the adherent placenta will in all probability require manual interference to effect its separation after the birth of the infant.-A third mode of termination is in suppuration, and the formation of an abscess in the uterine tissue. This abscess may open into the interior of the uterus, or into the cavity of the peritoneum, or into the bladder or rectum. In the case to which allusion has already been made, the cervix was the part chiefly involved, and the abscess pointed in the vagina, so that on making a small puncture its contents were safely evacuated.-A fourth and important result is a softening of the inflamed tissue. The uterine parietes during pregnancy are naturally very much less dense and resisting than in the non-gravid state; and consequently when the softening proceeds to an abnormal extent, the consequences are often serious. At a meeting of the Pathological Society of Dublin, January 26, 1839, Dr. E. Kennedy exhibited a specimen of "softening of the uterus," taken from the body of a woman who died on the day of her admission into the Lying-in Hospital. The only symptom of any note which she had complained of was pain at the upper and inner part of the thigh, where a slight redness was observable. On dividing the parietes of the abdomen, the uterus was seen of a deep purple, or almost black colour, while its texture was remarkably soft, and its mucous surface covered with grumous blood .- The occurrence of rupture of the uterus during pregnancy is I believe only to be accounted for on the supposition that the tissues have been previously softened by the inflammatory process. It seems otherwise incredible that an attack of vomiting, or a fit of passion, should suffice to rupture the walls of the womb; though these circumstances would be quite sufficient when the parts had previously been weakened by disease.

It is hardly surprising that metritis should not unfrequently produce miscarriage or premature labour. If the inflammatory action continue after the expulsion of the ovum, that process of involution by which the uterus is restored to the size and condition it presented prior to conception will be retarded. The deficient involution which thus results is often the foundation, as it were, of future chronic disease of the uterine substance; which disease may annoy the patient for years, materially injure her health, and prevent her from again conceiving.

The treatment of these cases is exceedingly simple. At the very commencement complete rest in bed and a simple diet must be insisted upon. If there be much fever the Liquor Ammoniæ Citratis in half-ounce doses may be given every four or six hours; together with plenty of diluents in the shape of iced-water, barleywater, tea, or lemonade. When the local suffering is great, relief may very quickly be afforded by the application, through the speculum, of three or four leeches to the lips of the uterus; a proceeding which will be found more efficacious and much less dangerous than the use of a dozen leeches to the hypogastrium or groins. Remembering, too, that the morbid action is frequently of an erysipelatous character, it will be a wise course not to lower the patient's strength; and on this ground alone, not to mention other reasons, general bleeding may be forbidden. Anodyne fomentations or hot poultices may be laid over the abdomen without any fear of their inducing uterine contractions: or a drachm of the extract of belladonna may be spread over the parietes, and the latter covered with a poultice. Supposing the suffering to be very severe, and to be the source of much restlessness, opiates in full doses will be demanded; while if the pain recurs in paroxysms, and is excessive, the exhibition of chloroform may be found necessary, or opiate enemata can be resorted to. If we suspect the formation of an abscess, or the occurrence of gangrene-which has been said to happen-steps must be taken to support the woman's strength by administering ammonia and bark or quinine, with

nourishing food and wine or porter. Should the inflammation appear to be subsiding into a chronic disease, no remedy will be found more useful than the bichloride of mercury; it being best to give the pharmacopæial solution of this metal in drachm doses, every six or eight hours.-Lastly, the practitioner may be advised to watch his patient very carefully, and to do so until she seems quite restored to health. also be prudent for him to calculate the dates at which she would be menstruating, were it not for her being pregnant, so that she may then be particularly cautious as to her exercise, diet, use of purgatives, &c.; since it is highly probable that the uterus becomes somewhat congested at these times, and very often only a slight spark is needed to rekindle the inflammatory action which may have just subsided.

8. Uterine Hæmorrhage.—Of the many topics which come within the range of obstetric medicine, few demand greater attention than the one now to be treated of. For not only is a discharge of blood from the pregnant uterus a prominent symptom of several different lesions, but the consequences which may result from it are often of vital importance both to the mother and her offspring. Now the subject being so serious and extensive, it is only natural that much doubt should be felt as to the best method of dealing with it, in order succinctly to impart all the information that is possible regarding this matter. The simplest plan seems to me to do that here which it is always necessary to carry into practice at the bedside; viz., to trace the effect to its exact cause. We shall thus have an arrangement, which, if not faultless, has at least the great recommendation of being convenient; while it may also serve to remind us that it will be useless to expect success in the treatment of these cases unless we attack the source of the hæmorrhage instead of resting content with merely prescribing for the symptom.

In the first place, then, the subject of hamorrhage as it arises from disease of the uterus, claims attention. During the early weeks of gestation the great hypertrophy and vascularity of the uterine mucous membrane which naturally exists, together with the remarkable development that the whole glandular apparatus of the cervix then undergoes, predisposes to a sanguineous as well as to a leucorrheal discharge; so that slight causes are sufficient to directly excite a flow of blood. It can be easily understood that this congestion is much increased by the co-existence of disease; and as readily may it be believed that amongst the disorders which particularly have this effect is chronic inflammatory ulceration of the cervix. This affection will generally be found to have existed prior to the occurrence of pregnancy; for although it may prove the cause of sterility in newlymarried women who have never conceived, yet it does not appear to have this effect in females who have previously had children. The prominent symptoms which are produced by inflammation and ulceration of the cervix are these :- a profuse mucous or muco-purulent discharge; a sensation of pelvic weight and bearingdown; continued pain in the back, particularly over the sacrum, which is increased by fatigue; and sometimes pain in the ovarian regions, which is occasionally very severe. Sexual intercourse also causes suffering, and very generally brings on slight bleeding. On practising the touch, an educated finger readily detects abrasion of the mucous membrane, with a pulpiness of tissue; while on introducing the speculum the labia will be found presenting a vivid red, velvety, granular appearance, and giving exit to a muco-purulent or sanguineous discharge. Not unfrequently the granulations have a fungoid appearance, almost resembling in their luxuriance an extensive malignant ulcer; and the os uteri is then found somewhat patulous. The whole cervix is also soft and congested, and after the first few months of gestation is directed backwards towards the sacrum; but these conditions are quite normal under the circumstances, and are not dependent upon the morbid state of the textures.

The fact has already been pointed out that the attacks of hæmorrhage to which this disease gives rise not unfrequently occur periodically; so that they have been mistaken for the catamenial flow. But it must be allowed that more generally the discharge of blood happens much too often to simulate menstruation; coming on after any extra exertion, or even following upon sudden mental emotion. At the same time, the hæmorrhage, though easily produced, is neither continuous nor very abundant; and it often ceases spontaneously on the patient assuming the recumbent posture, -a position by the by that is often the only one which affords any relief to the lumbar pain. Such being the chief symptoms, it is not surprising that the general health should be considerably diminished below the normal standard; nor that the patient soon becomes weak and loses flesh. She is also troubled with constipation, nausca, headache, attacks of faintness, vertigo, and palpitation; and in not a few cases of aggravated sickness, the cause may be traced to inflammatory ulceration of the cervix. The feeble condition of system thus engendered predisposes to abortion; while if the inflammatory congestion of the uterus proceeds to an excessive degree, it may at once provoke this accident by causing disease of the placenta and death of the fœtus.

The object of our treatment must be to heal the ulceration; a desideratum which can only be obtained by a skilful combination of constitutional with local remedies. But before taking charge of the case it will always be advisable for the practitioner to explain to the patient and her friends the danger which exists of the disease producing miscarriage; as otherwise, should premature expulsion of the fœtus happen, it might very unjustly be attributed to his efforts to effect a cure.

The constitutional treatment will vary with the exact condition of the patient; but it will always be necessary to advise perfect rest in bed, the avoidance of sexual intercourse, complete mental tranquillity, and a light nutritious diet. Supposing the circumstances to permit of it, benefit will generally accrue from allowing a moderate quantity of some light wine; particularly such as champagne, sparkling moselle, hock, or claret. In many instances a little brandy and water twice or thrice in the day is of advantage; but I have always found harm arise from the use of malt liquors. As regards medicines, my favourite remedy is the bichloride of mercury; of which from the one sixteenth to the eighth of a grain may be given thrice in the day, either in solution or in a pill with two or three grains of conium. If there be much weakness, the compound tincture of bark in one or two drachm doses three times a day, or the infusum cinchonæ spissatum of the Pharmacopæia in the proportion of ten or fifteen minims to an ounce of peppermint water, will be found invaluable.

The local remedies will be of the same character in most cases; since we desire the removal of the fungoid granulations, and their replacement by healthy tissue. Hence the cautious use of caustics must be at first relied upon; the acid nitrate of mercury being required in severe cases, whereas in milder instances the nitrate

of silver will usually suffice. Directly the state of the parts is reduced to that of a simple abraded surface, I have found no agent have such a good effect as the undiluted liquor plumbi diacetatis; which should be freely applied, through the speculum, every second or third day. At the same time the cure will be hastened by the patient's using properly a vaginal injection night and morning; which may be formed either of alum and decoction of oak bark, or sulphate of zinc and water, or of the solution of diacetate of lead in the proportion of half an ounce to half a pint of rain water.

Pregnancy is occasionally complicated with fibrous polypus of the uterus, but I have not seen any marked symptoms produced thereby during the term of gestation. The injurious effects resulting from these tumours are manifested at the time of parturition; when they are liable to impede the labour, or to give rise to hæmorrhage after the expulsion of the child by preventing due contraction of the womb. Even growths which are of small size, and which perhaps have given no indications of their existence prior to fecundation. may prove very troublesome at the time of labour; inasmuch as there is every reason to believe that they participate in the general development of the uterus, and gradually attain a considerable bulk.-A lady has recently been under my care, who suffered from profuse attacks of hæmorrhage during the first three months of pregnancy; for the relief of which large doses of every variety of astringent had been prescribed in vain. On examination, two mucous polypi not much larger than peas were found developed on the anterior lip of the womb; on the removal of which little growths by torsion and scraping, all bleeding ceased. Two months have elapsed since the operation, and the cure has been so far permanent.

A few words must suffice on the subject of hæmorrhage as it arises from uterine cancer. It is strange that a woman afflicted with this dire malady should not have her fertility destroyed; but even the existence of ulcerated carcinoma does not seem to prevent fœcundation, though it renders the process of childbirth one of extraordinary danger and fatality. Fungoid or medullary cancer is by far the most frequent variety of malignant disease which attacks the uterus; scirrhus or hard cancer being particularly rare in this situation. There are four prominent symptoms of ulcerated carcinoma,viz., the cancerous cachexia, pain, a leucorrhoeal or watery discharge, and hæmorrhage. The first is so strikingly peculiar and well-marked that from it alone the nature of the constitutional disorder may be diagnosed by the tutored eye; while the merest tyro cannot confound it with the appearance produced by anæmia from hæmorrhage, or with that which characterizes tuberculosis. The pain is generally severe in proportion as the disease is far advanced; and very often amounts to the most frightful agony in the latter stages. The watery discharge is not only abundant. but commonly horribly offensive; owing to its admixture with particles of the decaying tissue of the affected part. In some cases there is a continuous, though not abundant, draining of blood; in other instances there is merely a periodical sanguineous discharge, simulating an abundant catamenial flow; while in a third class we find profuse gushes of blood, coming on without any warning at intervals of a few days, and being succeeded by a lightly-coloured serous discharge. The duty of making a vaginal examination when a patient labours under the foregoing symptoms is so obvious that it would be almost impertinent to insist upon it. did not experience show that the practice is still not

unfrequently neglected. By such an examination the nature of the disorder is at once ascertained; for in at least 98 per cent. of the cases of uterine cancer the disease begins in the cervix, and not in the body of the womb.

In epithelioma, and in that peculiar disease—corroding ulcer—first described by the late Dr. John Clarke, there is a watery discharge; but it is not usually feetid, since there is not the same decay of tissue as in ulcerated carcinoma. In the former disease also, the large granular outgrowth—commonly known as cauliflower excrescence—readily bleeds; while the same thing often happens, though to a less extent, when the affection assumes the form of an intractable ulcer.

In the second place, hæmorrhage as it is a precursor of abortion demands our notice. Whatever cause destroys the connexion between the ovum and the uterus gives rise to a discharge of blood. Until about the fourth month of gestation the separation may occur at any part of the ovum, which is attached by its membranes to every part of the uterine parietes; but subsequently, when the placenta is formed, it is of course only at the seat of attachment of this organ that disruption takes place. The abundance of the hæmorrhage will directly depend upon the extent of placental detachment, and the age of the pregnancy. Moreover, in the early months, the result will in some degree be regulated by the seat of separation; for if it happen just above the cervix no ill consequences to the mother or fœtus may ensue, whereas when it takes place at the fundus, the blood in its course downwards necessarily increases the mischief by still further rupturing the connecting medium. With some women very slight accidents suffice to separate the ovum from the uterus, and the

former comes away easily after a few gushes of blood. But generally speaking the union remains firm at one or more parts; and then the patient has attacks of flooding for days or even weeks, until the entire separation is effected.

The general symptoms of abortion, the dangers which arise especially from the hæmorrhage, and the appropriate line of practice to adopt in all these cases, are points which have been so fully treated of in the chapter devoted to this subject, that further observations here are unnecessary. But before passing onwards there is one peculiar class of cases which must not be overlooked; the important feature in which is, that the blood effused from the utero-placental circulation, instead of escaping by the vagina, is retained in the womb. A few of these interesting examples of concealed accidental hæmorrhage during gestation have been recorded by various authors; and from them the two prominent facts may be gleaned, that the early symptoms are obscure, while the danger to life is very great. In a case which occurred in my own practice some few years ago, and which I fully reported at the time,* it appeared to me that death would certainly have resulted had not the patient been seen at an early stage and the nature of the accident been promptly recognised. The symptoms produced by this condition are just those which are due to loss of blood generally; with this important addition that the uterus is found tense, distended, and perhaps irregular in form, while it also gradually enlarges as the disposition to syncope increases. Of course, too, the results are more appalling in the late than in the early months; for not only do the bloodvessels get larger and larger as the time of

^{*} Medical Times. London, October 18, 1851.

parturition approaches, but the uterus seems then to be capable of greater expansion. Moreover, the uterine veins, though developed to an extraordinary size, have very feeble walls, and during gestation at least are destitute of valves; so that rupture easily occurs from any cause which produces engorgement of the venous apparatus. The necessity for a very guarded prognosis will be apparent from the fact that seven mothers perished out of the ten published instances of concealed hæmorrhage with which I am acquainted. In the fatal cases the accident occurred at the full term; whereas of the women who recovered two were seven months and a half gone, while my patient was eight months and a half advanced. In almost all the cases the children appear to have been still-born.

The indications for treatment are twofold; namely, to stop the hæmorrhage, while we support the vital powers. The formation of coagula in the open mouths of the utero-placental vessels will be best encouraged by the application of cold to the abdomen, by maintaining the strictest quiet, and by the administration-if time allow-of full doses of gallic acid. If, however, there be reason to suspect that the bleeding is continuing. no time should be lost in effecting delivery; for which purpose the membranes are to be ruptured, the uterus is to be excited by ergot of rve and galvanism, the activity of parturition is to be aided by the proper use of the binder, and the os is to be dilated by the fingers. As soon as the condition of the parts will safely allow of interference, the labour should be completed by turning, or by the application of the forceps. In all cases the strength must be kept up by stimulants, in quantities proportioned to the prostration; while rather than let the patient die from exhaustion, transfusion of blood ought to be resorted to.

Thirdly and lastly, we have to take into consideration the interesting subject of unavoidable hæmorrhage; as that variety of flooding is called which happens from the implantation of the placenta over the os uteri, since the very process by which the child is to be ushered into existence is the procedure which gives rise to it. To enter into a full account of the important subject of placenta prævia on the present occasion, would, I apprehend, answer no useful purpose; while a discussion of the various opinions entertained regarding it would certainly be out of place. My aim is simply to put the practitioner on his guard, and to show him that frightful attacks of hæmorrhage may take place during the last three months of pregnancy from this source.*

The mode in which the insertion of the placenta over the os uteri acts as a cause of hæmorrhage during the last three months of gestation, as well as in the course of labour, requires explanation. Most writers state that up to the fifth month the body of the uterus is chiefly affected by pregnancy; but that after this time the neck also undergoes important modifications. This part, it is said, then experiences a diminution in length, accompanied by a considerable expansion of its superior portion on a level with the internal orifice. The placenta being fixed cannot follow this spreading out of the upper part of the cervix, and hence its bond of union with the womb becomes more or less ruptured. But unfortunately for this view it seems certain, as has already been explained, that the neck does not shorten nor spread out at its superior part in the way which has been so long supposed; since on the contrary it preserves its whole length until the last fortnight of

^{*} For a masterly exposition of the whole subject the reader may be referred to Dr. Robert Barnes' lectures on The Physiology and Treatment of Placenta Prævia. London, 1858.

pregnancy. Hence we must seek for another solution of this circumstance; and the most plausible one with which I am acquainted is that given by M. Cazeaux. This gentleman says :- "During the first six months of gestation the uterus is developed more especially at the expense of the fibres of the superior part of the body or fundus of the organ; while in the last three months the fibres appertaining to the lower third of the womb are developed in a rapid manner, and the cavity of the organ is enlarged in consequence of the distension and growth of this lower part; a proof of which is, that the body of the uterus, which was pyriform in the earlier months, is perfectly ovoidal in shape towards the close of pregnancy; and I will further remark, that the development of the placenta is far more rapid in the first six than in the last three months. Now, this double circumstance seems to me quite sufficient to account for the production of hæmorrhage; for when the placenta is attached to the fundus, its growth is simultaneous with the enlargement of that portion of the uterine walls on which it is implanted. and it is evident that no hæmorrhage need occur: but when the after-birth is inserted over the cervix uteri, or on some adjacent point, the contrary must necessarily ensue, because the growth of the placenta is nearly completed, whilst a more considerable extension of the lower third of the womb has vet to take place. Of course, the placenta can no longer participate in this rapid development, by conforming to the increase of the uterus, and by following the extension of the wall on which it is inserted; and hence it spreads out from the centre towards its circumference, the fissures between the cotyledons become larger, and its different lobes are thus widely separated; but the growth of the inferior wall of the uterus is so rapid in the latter months, that

this mechanical enlargement of the placenta, on which M. Jacquemier has particularly insisted, is no longer sufficient to prevent the tension of the utero-placental vessels, or of the cellular tissue in which they ramify; and this tension being ultimately carried to an extreme, all of these cellulo-vascular adhesions give way and become ruptured, and this gives rise to the production of hæmorrhage."*—M. Cazeaux then goes on to show that this theory explains the hæmorrhages which occur when the placenta is attached to the lower part of the womb, or some point adjacent to the internal orifice; for it is not because the after-birth is implanted over the cervix that a flooding takes place during the latter months of pregnancy, but because it is in relation with the inferior third of the uterus.

The treatment of these attacks of flooding prior to the setting in of labour can never be otherwise than a matter of considerable anxiety; for a false step is very likely to be speedily fatal .- At the time of the discharge, all those measures usually recommended in cases of uterine hæmorrhage from any cause must be resorted to: and care must especially be taken that the patient is kept absolutely quiet in the horizontal position, with but little bed-clothing, and in a well-ventilated apartment. Cold or even iced acidulous drinks may be given freely with advantage; while cloths dipped in vinegar and water may be applied to the vulva and over the lower part of the abdomen, unless the skin is chilled and clammy, and the pulse small and feeble. When the loss has been small, when there is no reason to fear the occurrence of premature labour, and when the system is excited, it will often be useful to give a dose of

^{*} A Theoretical and Practical Treatise on Midwifery, &c. By P. Cazeaux. Second American, translated from the fifth French Edition, by W. R. Bullock, M.D., p. 684. Philadelphia, 1857.

opium; two grains of the extract in a pill being a good form, unless the enema opii of the London Pharmacopæia be preferred. But if the flooding is profuse and continuous, and the os uteri undilated, agents which are calculated to have an immediate and more decided influence must be resorted to. Of these the chief is the tampon or plug, which is best formed of cotton wool; although strips of linen, bits of charpie, or common tow will answer the same purpose. Whichever substance may be chosen, its efficacy will probably be increased by saturating it with vinegar; and small portions of it are then to be introduced, one after the other, right up to the orifice of the womb, until the vagina is closely packed. In one instance which I had recently to treat, the hæmorrhage was readily stopped for a time by soaking a small piece of wool in a strong solution of the perchloride of iron and passing it right up between the lips of the uterus, the plugging being completed with plain wool in the usual way. The practitioner having controlled the bleeding by this means must still carefully watch his patient; partly because it will be requisite to administer stimulants in proportion to the need for them, but particularly for the reason that the plug sometimes excites uterine contractions, through the irritation which it directly produces. Thus, cases have occurred where at the end of a few hours the tampon, coagulated blood, and fœtus, have all been suddenly expelled together.—Supposing that the flooding continues, and that the mouth of the womb is only slightly dilated, it will be advisable to resort to the detachment of that portion of the placenta which is implanted within the cervical zone of the uterus, as recommended by Dr. Barnes. This operation is easily performed by the introduction of one or two fingers; and hence is feasible when total detachment is quite

impossible. But if the flow has been great and is continuing in spite of this operation, if the loss has induced great prostration, and if the mouth of the uterus is dilated, it will then be better to pass a couple of fingers up between the placenta and uterine wall and rupture the membranes at once; afterwards endeavouring to increase the force of the uterine contractions by the binder, as well as by two or three full doses of ergot. Should the bleeding cease, the accoucheur will merely have to wait for labour pains, and act as in a natural labour; but if it continue in spite of the evacuation of the liquor amnii, it only remains for him to resort to turning, immediately the parts are sufficiently dilated to admit of the introduction of the hand without the employment of undue force. The greatest caution, however, will here be requisite; since a rupture of the cervix, even though it be only slight, will probably be fatal, owing to the great size of the vessels of this part when the after-birth has been implanted over it .- In conclusion, the principle cannot be too strongly inculcated that each of these serious and responsible cases must be treated according to the exact nature and urgency of the symptoms which are present, and not after any set There is no one particular line of practice which can be safely adopted in all instances. The obstetrician having diagnosed placenta prævia, cannot turn to his dictionary and be guided by its absolute statements. Not unfrequently Nature requires but little or no help; and in such, well-meant interference will only prove a very serious incumbrance. On the other hand, there are cases where life can only be preserved by the most prompt and skilful action; and the ability of the physician will often be put to the test no less in distinguishing between these two classes, than in effecting the appropriate proceeding.

CHAPTER XII.

THE DISPLACEMENTS OF THE GRAVID UTERUS.

- Prolapsus of the uterus.—2. Anteversion of the uterus:—anteflexion.
 —3. Retroversion of the uterus:—retroflexion.—4. Hernia of the uterus:—hernia of the unimpregnated organ:—hernia of the ovary, and of the Fallopian tube:—hernia of the gravid uterus.
- 1. Prolarsus of the Uterus.—The fact has already been mentioned that as soon as pregnancy takes place the uterus, owing to its increased weight, sinks deeper into the cavity of the pelvis than it was before; and it need scarcely be said, that, as a matter of course, the more roomy the pelvis, and the greater the relaxation of the vaginal tissues, the lower will be the position taken. The mere occurrence of pregnancy, therefore, favours for a time the descent of the womb; and hence it can scarcely be deemed surprising that cases of prolapsus occasionally require treatment at the hands of the physician, but rather that they are not much more common than they really appear to be.

The descent of the uterus during gestation, as at other times, may be partial or complete,—in other words, there may exist either prolapsus or procidentia. In the former case the uterus rests upon the floor of the vagina, with its lips perhaps just visible externally; in the latter, the organ is protruded outside of the genitals, and hangs down between the upper part of the thighs. Either form of displacement may occur suddenly after fœcundation; or complete procidentia may come on gradually as an aggravated condition of a pre-existing

prolapsus. As pregnancy advances to about the fourth month, and the uterus rises out of the pelvic cavity, a spontaneous cure usually becomes effected; although more than one case is known, extraordinary as it may seem, where the displacement has continued until delivery.

The symptoms which result from this condition vary somewhat according to the capacity of the pelvis; but usually complaint is made of considerable discomfort, of bearing-down pains, of a sense of weight in the lumbar region and in the groins, of more or less difficulty in micturition, and often of very troublesome constipation. Moreover, there is always a risk of the irritation which the rectum and bladder experience being reflected to the uterus, so as to give rise to premature contractions and abortion

In cases of simple prolapsus all that need be done in the way of treatment is to recommend that the recumbent position be maintained for a time; while care is taken that the functions of the bladder and rectum are properly performed. Indeed, especial caution is necessary lest the power of micturition be interfered with ; for in one recorded instance a fatal result ensued, chiefly owing to the bladder having been allowed to become excessively distended. Some practitioners have advised the use of a pessary to support the womb; but I have never seen an instance where the introduction of such an instrument during pregnancy seemed aught but a greater evil than the condition it was destined to remedy.-In procidentia the uterus must be gently returned within the vagina, and its further descent prevented by the patient keeping her bed for some few weeks. If it be impossible for this amount of rest to be obtained, a proper bandage should be worn to support thoroughly the perineum and genital organs, after

reduction has been effected. The use of the cold or tepid salt-water hip-bath is always beneficial; while if there be any leucorrheal discharge, astringent injections may be gently employed night and morning. Sometimes the reduction is impossible, owing to the uterus having formed adhesions with the contiguous viscera; a condition which may terminate in inflammation and pelvic abscess, as the progressive growth of the womb stretches the false membranes or ruptures them. In such a case all that can be effected is to support the uterine tumour by a perineal bandage, while the patient is confined to the bed or sofa.-When a woman has suffered from a falling of the womb under the circumstances we have been considering, care should be taken not to allow her to sit up too soon after delivery; since by proper rest during the puerperal period a radical cure may often be effected, whereas by neglecting this precaution the laxity of the ligaments and of the vaginal walls will be increased, and a state of chronic procidentia induced.

2. Anteversion of the Uterus.—This displacement of the pregnant uterus is of very rare occurrence; so much so that many obstetric physicians in large practice have never seen an instance of it, and even deny the possibility of its occurrence. But although no well-marked case has ever come under my own notice, it yet seems to me impossible to doubt that complete anteversion does sometimes happen. Indeed, it is not very uncommon to meet with cases where the normal inclination of the uterus forwards is somewhat increased, and slight irritability of the bladder thereby induced at an early period of gestation; though in these, perfect rest for a day or two will serve to relieve the symptoms, and allow of the womb resuming its

natural position. But it does not seem difficult to understand that some powerful cause may suffice to increase this incipient displacement; and hence for my own part certainly, I have no hesitation in accepting the statements which are made by authors who have

met with examples of this malposition.

In anteversion of the uterus the organ lies transversely in the pelvic cavity; the fundus being directed forwards on to the bladder, while the cervix is tilted upwards and backwards towards the sacrum. The causes of this accident are probably falls, efforts at vomiting, repeated straining at stool, and violent exertion in lifting heavy weights. The signs by which it may be diagnosed are chiefly these :- The os uteri is thrown upwards, almost beyond the reach of the finger, and facing the sacrum; while the fundus can be felt as a globular tumour in front of the vagina, and behind the symphysis pubis. The veins in the upper portion of the vagina are found enlarged and much congested. There will usually be more or less trouble in passing the urine, sometimes amounting to complete retention; this being due to the pressure exerted by the fundus uteri upon the meatus urinarius and the neck of the bladder. There may also exist constipation or troublesome tenesmus; though the rectum suffers much less than the bladder. Pain is felt in the lumbar and hypogastric regions, owing to the dragging of the nerves; while the patient may also be inconvenienced by a constant feeling of fulness and heaviness about the pelvis, or may even suffer acutely from severe paroxysms of forcing or bearing-down pain.

The reduction of an anteverted uterus should be attempted with care; the efforts, if they fail to restore the uterus, being discontinued after moderate perseverance, since otherwise they are not unlikely to cause abortion.—To effect replacement, the bladder and

rectum are to be thoroughly emptied. The patient may generally be placed under the influence of chloroform with advantage. She is then to be turned on to her left side; and two fingers being introduced into the vagina, the practitioner makes gentle but steady pressure in an upward direction, on the fundus of the uterus as it is felt through the anterior part of the walls of this canal. Supposing reduction to be thus accomplished, a full dose of opium may be at once advantageously administered; while the patient is to be kept for several days in a recumbent posture. I have no doubt that in most cases, the uterus-if left alone -will right itself as gestation advances; but as in the meantime the patient may suffer much pain and inconvenience, it will be better to save her from this by the proceeding just recommended, always provided it can be accomplished without compromising the safety of the fœtus.

In anteflexion of the uterus, the organ becomes more or less completely bent upon itself; so that while the fundus is thrown forwards upon the bladder, the cervix retains its normal position in the centre of the vagina. The point of flexion is generally at about the union of the cervix with the body, or perhaps just above this part. Speaking generally, it will be better not to attempt reduction. The following is a good illustration of this displacement:—

A lady, thirty-three years of age, the wife of a medical man, in the first month of her pregnancy, fell from a flight of steep stairs, the bowels being exceedingly constipated. There was no homorrhage, but a state of syncope lasted for nearly an hour. For the ensuing six or seven weeks she was never free from a heavy bearing-down sensation in front; which rendered micturition frequent and painful, but in no way interfered with defectation. She was also irritable and feverish; and it was thought by the husband that the womb was retroverted. Dr. Ashwell first saw her at the end of the third month; and on examination found the cervix uteri in its natural position while the fundus was lying forwards between the anterior wall of the vagina and the bladder, being felt in the form of a round solid tumour. The cervix was more elongated, fuller, and harder than natural; the os

was open; and pressure at the point of flexion caused pain. Attempts were made to effect reduction by placing the fingers of the left hand behind the publs, so as to raise the fundus, while the forefinger of the right hand was employed to draw the cervix downwards and forwards. As these efforts failed, the case was left alone.—An examination at the sixth month satisfied the husband that the curvature had nearly disappeared; and although the patient was not quite free from suffering during the remainder of her pregnancy, yet she was delivered without any difficulty, and completely recovered.

3. Retroversion of the Uterus.—The uterus in retroversion is thrown backwards from its normal erect attitude; so that the fundus becomes impacted in the hollow of the sacrum, while the cervix and os are carried upwards and forwards behind the symphysis pubis. Thus both the bladder and rectum become unduly compressed; while the vagina is drawn upwards and forwards by the neck of the womb. This displacement may occur at any stage of pregnancy, but it happens much more frequently during the first three or four months than at any other time. It is also exceedingly rare in primiparous women.

A correct explanation of this important disease would appear, as far as I can learn, to have been first given in France, by Desgranges, in the year 1715, and subsequently by Gregoire in 1746; while in this country the attention of the profession seems never to have been directed to the matter until October, 1754, when William Hunter delivered a public lecture upon a fatal example of it. Some sixteen or seventeen years later the nature of this affection was so little understood that Dr. Hunter again gave a description of it to the Medical Society, on which occasion he concluded his essay in the following words:—

"In the last place, gentlemen, give me leave to tell the public why you thought some account of the retroverted uterus so necessary. You were well assured that it happens frequently, and yet that a number of practitioners know but little of it; so little indeed, that, as you well know, in this town, within these two years last past, two pregnant women lost their lives by this accident, without the cause of their complaints being dis-

covered till after death. In both of these cases, the symptoms alone were almost sufficient to determine the nature of the complaint; and the circumstances of the tumour with regard to the vagina and rectum such, that it would now appear to be impossible that an experienced practitioner should mistake the case. Yet, in both of these instances, experienced practitionerisfailed; and saw with regret in the dead body, what they might have easily cured in the living, if they had made a very obvious discovery in a proper time."*

This displacement of the uterus may either come on gradually, or it may happen suddenly. In the first case, it is perhaps sometimes due to the antero-posterior diameter of the pelvic brim being unduly encroached upon by a large sacral promontory, under which projection the gradually enlarging uterus hitches; so that this organ instead of rising out of the pelvis has its fundus slowly thrown backwards into the curve of the sacrum. This condition gives rise to little or no disturbance until the uterus attains a size sufficient to compress the bladder and rectum; but then the usual symptoms immediately become manifested. Retroversion may also occur slowly from habitual constipation; owing to the accumulated fæcal matters in the sigmoid flexure of the colon and upper part of the rectum producing constant pressure upon the fundus. When the displacement is effected suddenly, it generally takes place from some violent exertion; such as long-continued straining to expel hardened fæces, a severe attack of vomiting, attempts to lift heavy weights, and falls. Many authorities assert that a distended bladder may either gradually push the fundus backwards, or may do so suddenly under the impulse of a violent straining to void the urine; but the relations of the bladder to the anterior wall of the abdomen would seem to me quite sufficient to prevent this viscus from having the effect supposed. The retention of urine which accompanies these cases is the consequence and not the cause of the disease.

^{*} Medical Observations and Inquiries. By a Society of Physicians in London. Second Edition. Vol. IV., p. 409. London, 1772.

There is one symptom which is particularly striking in this affection, and which cannot fail to attract attention. The pressure exerted by the misplaced uterus upon the neck of the bladder, at first partially, but at length completely obstructs the flow of urine; and hence results retention, with an uncontrollable desire to empty the bladder, and frequent straining but fruitless efforts. The sense of pressure upon the rectum also gives rise, though in a less marked degree, to a constant feeling as if the bowels were loaded; and consequently numerous attempts at defæcation are made. Should these symptoms pass on unrelieved, the bladder speedily becomes enormously distended; the urine decomposes in this viscus, giving rise to all the dangerous symptoms of uramia; and the coats of the organ either inflame and ulcerate, or they rupture mechanically from overtension. Whichever happens, the result is of course the same,-the escape of the urine into the peritoneal cavity, and speedily fatal inflammation of the serous membrane. The woman may, however, perish from the blood-poisoning caused by the absorption of the foul ammoniacal urine before the bladder has had time to rupture, for it is astonishing to what an extent the coats of this organ will gradually stretch; or she may die from the same cause after the urine has been all drawn off, in cases where the catheter has not been used until the system has been too profoundly affected by the morbid fluid. Moreover, in many instances a few ounces of urine dribble away in the course of the day; and this not only delays the time of rupture, but sometimes misleads the practitioner, who thinks the bladder must be empty because he is told that the urine cannot be retained and is constantly escaping. This latter fact was well exemplified in the following case:-

A woman, thirty five years of age, quickly became the subject of entransa distension of the abdomen. On examination this enlargement was found to have partially the characters of extreme ascites, that is to say there was dulness over the greater portion of the abdomen, and distinct fluctuation. A medical practitioner who had been called in by the friends was desirous of performing paracentesis, so urgent were the symptoms; but fortunately this operation was deferred, and the patient was removed to the Wostminster Hospital, where she was placed under the care of Dr. Basham. On minutely inquiring into the history, it appeared that she was three much advanced in pregnancy; and as a ratheter could not be introduced into the bladder, an examination per vaginam was made. This clearly showed that retroversion of the gravid uterus was present; which had probably existed for some three weeks, as the abdominal swelling had been forming from about that time. Urine, to the extent of a few ounces, daily dribble. from the bladder; and although this may have given some slight relief, yet the great pruminence of the distended viscus made the patient fest as if she would burst. After a little care, the house-surgeon succeeded in pushing the fundus of the uterus upwards into its natural position; inmediately upon the accomplishment of which, more than a gallon of urise flowed away spontaneously, without the aid of a catheter. The woman ultimately did well.

The diagnosis of retroversion is not a matter of difficulty. The mere fact that a pregnant woman is unable to empty her bladder, that she has a constant desire for defecation, and that she complains of pain and pelvic weight, ought at once to lead the practitioner to institute a physical exploration. A glance at the abdomen will suffice to show that it is enlarged; while the sense of touch will in all probability detect fluctuntion, if the retention has existed many days. On examining per vaginam, it will be found that immediately the finger enters this canal it encounters an obstacle in the shape of a firm globular body. This is the posterior surface of the uterus; which organ fills the whole pelvic cavity, like a tumour spread out much more posteriorly than anteriorly. No os uteri can then be felt : but if the practitioner persist, as he ought to do. in passing his finger in the only direction in which it will go, he will at length reach the mouth of the womb high up behind the pubes. An examination by the rectum confirms the fact that the pelvis is filled by a globular tumour. And the nature of the case is then

confirmed beyond the possibility of doubt, by the introduction of a long flexible catheter into the bladder; by means of which this viscus will be emptied, and the abdominal tumour removed.

The prognosis in retroversion is always grave; and especially is it so, if the displacement has existed sufficiently long to allow of the blood being vitiated by the decomposing urine. Moreover, the constipation and retention of urine are not only sources of great danger in themselves, but they serve mechanically to increase the displacement. This is clear from the fact that the bladder cannot enlarge upwards, without drawing up the uterine neck with it; whilst, as the pressure of the fundus uteri blocks up the rectum, of course the stercoraceous matters accumulate above the point of obstruction, and thus force the fundus lower by their Moreover, before the patient seeks advice, she very generally has exhausted herself with straining and bearing-down; which expulsory efforts merely serve to increase the mischief.

In the treatment of this accident, the first step is to carefully empty the bladder; for not only is the risk of rupture to be immediately lessened, but the equally great danger of uræmic poisoning is, if possible, to be obviated. This must be done with a flexible male catheter; the bladder being usually drawn up too high, and the urethra consequently too much lengthened, to allow of the ordinary instrument being of any service. Then, if there should appear to be any passage through the rectum, it will be advisable to administer copious soap and water enemata, with the tube of the stomach-pump passed above the obstruction; since the reduction of the uterus will be much facilitated by the previous dislodgement of the fæcal matter which may be present. Sometimes the adoption of this line of practice

is sufficient, and the uterus spoutaneously assumes its normal position. More generally, however, the fundus has to be pushed upwards. But before attempting this operation, I make a point of administering chloroform : for it is not only cruel to inflict unnecessary pain upon a poor woman already worn out with suffering, but the effect of this anæsthetic is exceedingly beneficial in preventing those violent bearing-down efforts which the patient, when conscious, can scarcely help making, The patient being insensible, and lying in the ordinary obstetric position, the accoucheur introduces his whole hand into the vagina; and then doubling it, he applies the flat surface of the first phalanges to the tumour. and presses the body and fundus of the uterus upwards and forwards in the direction of the sacral concavity. In one difficult case which was under my care, this proceeding was favoured or assisted by passing a large elastic pessary into the rectum, and then gradually filling it with water. The reduction may sometimes be effected at the first trial, though not uncommonly the attempt may have to be repeated several times; in which event it must not be forgotten to frequently empty the bladder, if many hours are allowed to elapse between the operations. On making a third or fourth trial it may be better to place the woman in such a position that the weight of the intestines may be removed from the uterus. M. Godefroy succeeded in three very grave cases, by adopting the following plan: -The patient rested her head and hands upon the floor, whilst the anterior part of the thighs and legs reposed upon the bed, where they were held by assistants, while this gentleman acted upon the fundus through the vagina or rectum. It would, however, serve quite as well to have the woman on her knees and elbows; a position which is only objectionable because it does

not well allow of the administration of chloroform. Supposing the attempt, however made, to prove successful, a full dose of opium should be administered, and the patient ordered to keep the recumbent posture for several days; whilst if the coats of the bladder have lost their tone, the catheter must be introduced every eight or twelve hours, until full power is recovered.

But it sometimes unfortunately happens that the reduction is impracticable, and an anxious question then arises as to the course to be pursued. Hunter advised that the uterine wall and the fœtal membranes should be punctured under these circumstances, in order that the bulk of the uterus might be lessened by. evacuating the liquor amnii; and one successful case where this operation was performed through the rectum has been recorded. Nevertheless it seems to me that such a proceeding can very seldom, if ever, be necessary; since some little skill and much patience will enable the practitioner to introduce a stylet or uterine sound through the os uteri, and with it to procure the discharge of the liquor amnii. Even if this could not be accomplished it would generally be possible to induce uterine contractions by the administration of ergot, combined with the proper use of galvanism. Of course death will sometimes occur, in spite of the best treatment, as in the following instance which is related by Dr. Blundell :-

A lady, labouring under ovarian dropsy, was recommended to ride out daily in an open carriage. In one of her excursions, the vehicle was upset, and she was thrown out with great violence; her abdomen striking with great force against a stone which was lying in the way. On her return home, a very copious secretion from the kidneys ensued, with great abdominal pain; but in the course of a few days she recovered, and found herself entirely cured of the dropsy. Some time afterwards she married; and died with an irreducible retroversion of the uterus, about the fourth month. Inspection of the body showed that the fall had produced a rupture of the ovarian cyst, and the effusion of its contents into the peritoneal sac; whence the fluid had been absorbed by the kidneys. The remains of the cyst, falling upon the uterus, had carried it down below the promontory of

the sacrum; and the womb becoming retroverted, had been fixed by adhesions in its abnormal position. While the lady remained unmarried, she felt but little inconvenience; but on the uterus enlarging from pregnancy, fatal pressure on the bladder and rectum took place, as the displacement could not be rectified on account of the adhesions.

Dr. Henry Bond, of Philadelphia, has invented an instrument to aid in the replacement of the retroverted uterus, which Dr. Meigs says was successful in a difficult case that had resisted all other means. had no experience in the use of this instrument it may seem rather bold, if not rash, to condemn it; but it is necessary to recollect that when skilful efforts, perseveringly employed, fail to procure reduction, we may be almost certain that abnormal adhesions have been established between the uterus and adjacent parts. To tear roughly through these false membranes, will be simply to produce hæmorrhage, or acute inflammation; and either of these alternatives appears to me more fraught with danger, than rupturing the membranes with the uterine sound, or than puncturing the uterus, or even than leaving the sufferer to the resources of Nature.

It might be thought quite impossible that a woman should reach the full period of gestation with a retroverted womb; but the reader will find one extraordinary instance of this nature recorded by Dr. S. H. Jackson,* and another by Dr. Samuel Merriman. † In both of these cases the patients remained for nearly a week in labour, and suffered severely; but in each, at the end of some days, the womb was spontaneously restored almost to its natural position, and delivery completed. Both of the women recovered favourably; though the

Edition, p. 59. London, 1801.

+ A Dissertation on the Retroversion of the Womb, including some observations on Extra-Uterine Gestation, p. 28, London, 1810.

^{*} Cautions to Women respecting the state of Pregnancy, &c. Second

two children were born dead, while one was considerably decomposed.

Retroflexion of the uterus may occur during pregnancy, though it is much more seldom met with than retroversion. In the unimpregnated state just the reverse holds good. The typical course of a case of retroflexion may be thus roughly sketched:—

A woman thirty-five years of age, three months advanced in her fourth pregnancy, complains of severe attacks of sickness, constant bearing-down pains, great pain in the back, and of tenesmus with much suffering during defectation. For some days before seeking relief her feelings have been such that she has imagined abortion was about to occur; but she has generally derived relief from rest in bed. The functions of the bladder have not been interfered with. On making a vaginal examination, the nterus is found enlarged, with its fundus forming a globular tumour under the sacral promontory; but the cervix and os occupy their normal position. The explanation of this condition is clearly, that the uterus is bent upon itself, very much resembling the neck of a retort.—The evacuation of the rectum, and the use of gentle pressure upon the fundus through the walls of the vagina, fail to effect replacement. The patient is therefore ordered to remain in bed, while she is kept free from pain by sedatives.—At the end of a fortnight the retroflexion will be found to be less; and at the expiration of another month, the uterus may be detected occupying its normal site.

Dr. Merriman was of opinion that pregnancy might go on for the full period with a complete retroflexion of the womb; and that this displacement might form an important and dangerous complication of labour. This view has recently been fully confirmed, by a case which was under the care of Dr. Oldham;* in which there was found perfect retroflexion of the gravid uterus during labour at term. In this instance the nates of the infant presented; and delivery was safely accomplished, so far as the mother was concerned, by grasping a foot and withdrawing the child.

4. Hernia of the Uterus.—Hernia of the uterus or of its appendages is of very rare occurrence; but it

^{*} Transactions of the Obstetrical Society of London, Vol. I., p. 317. London, 1860.

is rather remarkable that of the recorded cases, the majority are examples of hernia of the gravid uterus. Hernia differs from eventration of the uterus in this respect; that whereas in the former case the womb passes through the inguinal or crural opening, in the latter it is forced through some artificial aperture—as between the recti muscles, &c., or through a wound in the abdominal parietes. For the thorough comprehension of this subject it appears advisable to speak, first—of hernia of the unimpregnated uterus; secondly—of hernia of the ovaries; and thirdly—of hernia of the gravid uterus.

a. Hernia of the unimpregnated uterus may occur at the inguinal ring, or at the crural arch, or through the obturator foramen; and may probably arise from too great relaxation of the ligaments of the uterus, or from displacement of the uterus by tumours within the pelvis, or from the contraction of bands of false membrane, &c. The diagnosis of this condition from ordinary intestinal herniæ will hardly be very difficult, if a vaginal examination be instituted; though without this. a mistake may be made, since—as one of the following cases shows-the symptoms may at times resemble those due to strangulation of the intestines. An examination of the recorded cases of uterine hernia shows that pregnancy may occur, and full development of the fœtus take place, while the uterus remains in its abnormal position. The treatment of such an accident must depend very much on the length of time which has elapsed since its occurrence, and on the nature of the symptoms. When recent, it would seem not unlikely that cautious attempts at reduction might be attended with success: but supposing the manipulations to be fruitless, an operation would scarcely be justifiable,

unless there was severe suffering and constitutional disturbance.

Two instructive examples of this displacement have been recorded by M. Lallement:*—

In one, the patient was a laundress who had had several children without experiencing anything remarkable. When about the age of fifty, the catamenia having ceased, a tumour suddenly appeared in the right groin, after making some unusual exertion. Though at first painful, it soon ceased to be so: and she lived for twenty years afterwards. On making an examination of the tumour after death there was found a very thick hernial sac, containing the uterus, and the right ovary and Fallopian tube; the left ovary and tube were pressing upon the external part of the inguinal ring; and the vagina, drawn up by the uterus, was compressing the bladder against the pubes. M. Lallement points out that this altered direction of the vagina is the most certain sign of the existence of an inguinal hernia of the uterus.

The second instance is an example of crural hernia of the uterus, occurring also in a laundress, after eight easy labours. At the age of forty, eight days after the birth of her last child, and before resuming her ordinary occupation, she perceived a small protrusion in the right groin. Failing to reduce this, she took but little notice of it for a year, when an attack of colic and nausea caused her to apply a bandage for a short time. At seventy-four years of age she had symptoms indicative of a strangulation of the hernia, such as pain, nausea, vomiting, and colic: these symptoms partly disappearing after a copious discharge of semen from the tumour. From the age of seventy-four to eighty-two she continued subject to attacks of pain and nausea: until, one day, new symptoms of strangulation set in, which made her enter the infirmary of the Salpëtrière. At this time, the tumour filled the right groin; it was about five inches long, and four broad; its shape was that of a three-sided pyramid, with the base above, and the apex below; and the finger passed above the tumour could distinguish the inguinal ring in its healthy state, and immediately beneath the crural arch. After death the sac of the hernia was found to contain the uterus, ovaries, Fallopian tubes, the upper part of the vagina greatly stretched, two distinct folds of omentum and two cysts—perhaps bydatids. It was a crural hernia. The rectum and bladder were in their normal positions.

β. Hernia of the ovary may occur at the inguinal ring, or at the crural arch, or at the sciatic notch like an intestinal ischiatic hernia, or through the tissues of the vagina. It may take place on one side of the body only, or on both; it may exist from birth, or it may happen as the result of accident or disease; and the

^{*} Dictionnaire des Sciences Médicales. Article Matrice. Vol. XXXI. p. 226. Paris, 1819.

sac may contain the ovary alone, or with this there may be the uterus, the Fallopian tube, and even a portion of intestine. From the anatomical relations of the pelvic viscera it can be readily understood that hernia of the ovary occurs more frequently at the inguinal ring than at any other part; the passage of the round ligament through the internal abdominal ring, along the inguinal canal, to the labia majora, leaving-as it were-a weak point.-This accident has been mistaken for an intestinal hernia, for an enlarged inguinal gland, and for an abscess; some interesting examples of which errors have been put on record by M. Deneux.* The case in which Mr. Pott removed both these glands is well known. The particulars, however, are so interesting that they may be mentioned here :-

A young woman, twenty-three years old, was admitted into St. Bartholomew's Hospital on account of a small swelling in each groin. These swellings had been for several months so painful as to prevent her from following her occupation as a servant: they were soft and moveable: and they lay directly upon the outside of the tendinous opening of the oblique muscle, through which they appeared to have passed. The woman was large breasted, and menstruated regularly: her general health was good. Owing to the inconvenience which the tumours caused, Mr. Pott determined to remove them: and having done so, they were found to consist of the two ovaria. The patient subsequently enjoyed good health, but became thinner and more muscular; her large breasts disappeared; and she never menstruated again. The last observation of her was made many years subsequent to the operation.†

The treatment here resorted to, must not be regarded as exemplifying that which should be usually practised. Speaking generally, the less that is done the better: though when the hernia is recent, attempts ought to be made at reduction; and if these efforts be followed by success, a bandage or truss should afterwards be worn.

^{*} Recherches sur la Hernie de l'Ovaire, pp. 37 to 58. Paris, 1813. + The Chirurgical Works of Percival Pott, Vol. II., p. 210. London, 1779.

Dr. Oldham* has recorded two cases, in both of which the two ovaria are said to have descended through the inguinal canals and to have become permanently lodged in the upper part of the external labia. The patients were aged respectively nineteen and twenty; neither had ever menstruated; and the most careful and repeated physical examination failed to detect either uterus or vagina. One case presented the interesting physiological peculiarity of a spontaneous periodical increase of one or other of the ovaria, followed by its gradual reduction: thus-it is said-supplying direct evidence of an ovarian menstrual act. This is really the important feature in the history; for otherwise there is but little to show that the patients were not males, having each a cleft urethra and scrotum, a very short penis, and with the testes just drawn out of the inguinal Without doubting the correctness of Dr. Oldham's views on these cases, it is still certain that many instances of the malformation I have mentioned closely simulate female development; while sometimes the similarity is so great, that without a minute examination of the bodies themselves, it cannot really be determined whether they are testicles or ovaries.

A few examples of hernia of the Fallopian tube alone are recorded. In one instance the displacement took the form of a crural hernia. As the sac was thought to contain fluid, it was punctured; the patient afterwards dying from peritonitis. After death the sac was found to contain nothing but the hypertrophied oviduct.

γ. Hernia of the gravid uterus remains to be considered. It need hardly be remarked that examples of

^{*} Proceedings of the Royal Society of London, Vol. VIII., p. 377. London, 1857.

this accident are exceedingly rare; though they are not on this account the less interesting, neither does this circumstance render it the less imperative for the practitioner to be acquainted with their nature.— Dr. Evory Kennedy says that he met with a remarkable case of hernia of the uterus at the umbilicus in a woman who had had a number of children. When in labour of her second child, hernia took place at the umbilicus, which gradually increased in extent with each child she carried, until at length the impregnated womb made its way completely out of the abdomen, and became suspended over the pubes, so that at the end of the ninth month, it hung down to the knees.* A more recent example has been published by Mr. G. C. P. Murray:†—

The patient was a woman, aged thirty, the mother of three children, and had been from infancy affected with a small umbilical hernia, which had always been easily reduced. When in the eighth month of gestation she found one morning, in rising suddenly from the recumbent position, that a large tumour had forced itself through the navel. This protrusion proved to be nothing less than two-thirds of the impregnated uterus, the fœtus being distinctly recognised by palpation. There was no rupture of the linea alba. Reduction was at once effected by means of gentle and careful manipulation, and the organ was happily kept in sitû until the end of gestation, when a live female child was born.

I believe that no instance of hernia of the gravid uterus at the inguinal ring is known to have occurred in our own country; and probably not more than five or six examples are to be found recorded in medical literature. Sir David D. Davist refers to four; and one has been seen since the publication of his work. As the particulars of this last case are very instructive and

London, 1836.

^{*} Observations on Obstetric Auscultation, &c. &c., p. 40. Dublin, 1833.

⁺ Transactions of the Obstetrical Society of London, Vol. I., p. 77. London, 1860. ‡ The Principles and Practice of Obstetric Medicine, Vol. II., p. 912.

interesting, I shall here conclude by quoting it, in place of making further general observations. The details are as follow:*—

On the 26th January, 1839, Professor Ladesma was called to visit in consultation Elena Ramos, aged forty-two, a married woman residing at Salamanca. She was strong, and in the enjoyment of good health. belly was soft and natural. At the inferior part of the hypogastrium there was a large tumour resting upon both thighs, but especially on the right one. Its base, or origin, was situated at the upper and right part of the mons veneris, extending over the superior portion of the pelvis, involving the integuments of the lower part of the helly of the same side, descending and prolonging itself so as to comprehend the labium and put it in an extreme state of tension. The base of the tumour at this time—26th January—measured about twenty-two inches; its circumference at the middle was twenty-five : and its whole length twenty-three inches. These dimensions became afterwards very different, the circumference of the neck diminishing, and that of the middle greatly expanding, so as to give the tumour an oval shape. It became subsequently more spherical, after using for some time a suspensory bandage slung from the shoulder. The common integuments covering the tumour were almost of their natural colour ; but were a little edematous, and marked with a few slightly varicose vessels. —Upon examining the tumour with the hand, Professor Ladesma detected within it a fluid, in which was floating a solid body. During the various manipulations, the patient suffered no inconvenience, nor did she experience any peculiar sensation. She believed that she was with child, and thought she felt the fœtus moving within the tumour.

The following was the previous history of the patient. She had borne six children in an easy way; having always had such good recoveries, that she was able to attend to her household duties a few days after labour. Before marriage she was subject to a reducible inguinal hernia, which became more troublesome after the birth of her first child. For four months prior to the appearance of the tumour she had not menstruated: and at the time the tumour appeared she believed herself to be three months gone with child. It first presented itself under the following circumstances:—One day when on foot in the street, and stooping down to a table to purchase some household necessaries, she felt an uneasy dragging sensation in the lower part of the left side of the abdomen. Feeling sick, she went home. For a short time, blood dropped from the vulva. Upon examining the groin affected with hernia, she found a tumour in the situation of the usual hernial protuberance, but having a different consistence; at the same time she noticed that her abdomen had lost somewhat of its former elevation. The pain which she suffered in the swelling caused her to have recourse to all the means of reduction which she had formerly been in the habit of successfully employing: but though she continued her efforts for some time, they were useless. In her manipulations she did not discover

^{*} Fenômeno Raro de Preñez; o Historia de una Hernia de la Matriz, &c. By Don Julian Ladesma, Professor of Surgery at Salamanca, 8vo., pp. 23. Madrid, 1840.—Condensed from Dr. J. R. Cormack's Contributions to Pathology, Therapeutics, and Forensic Medicine, p. 43. London, 18.4.

a fœtus; but in six or seven weeks after the descent of the tumour, she felt movements in its interior, and became reassured of her pregnancy. Under these circumstances she consulted two medical men, who decided that the tumour contained a feetus, and that it was a case of extra-uterine conception. Professor Ladesma, on the other hand, gave it as his opinion that it was a hernia of the womb, which had issued from the right inquinal ring, carrying with it the product of conception, and constituting a secondary He further declared that reduction was impracticable, and that when the patient came to her full time it would be necessary to deliver her by a surgical operation.

A committee of the medical authorities of Salamanca met in the patient's house upon the 2nd March : and after an examination by the vagina, in which the os uteri could not be discovered, it was agreed that Ladesma's opinion was correct.- The patient went on well. The stethoscope was frequently applied; and both the placental and fætal pulses were found to differ very much, one day from another, while occasionally the former became inaudible for a few minutes. The sounds of the heart were very distinctly heard to be double; while the beats varied from 130 to 150 in a minute, and were much more frequent than in the mother.

On the morning of the 6th of June the patient stated that during the preceding night she had experienced pains in the lumbar region. On the night of the 6th she continued to feel pains in the loins, and slighter ones in the uterus. At half-past four on the morning of the 7th, the pains increased somewhat, and the waters came away by the vagina. The tumour then became considerably diminished in volume; which induced Ladesma to attempt reduction, so that if possible the child might be delivered by the natural passages. The endeavours were unsuccessful. Under these circumstances it was determined to resort to bysterotomy; which was accordingly performed at half-past twelve o'clock in the presence of fourteen medical gentlemen. The patient lay in bed upon her back : the tumour which was formerly thirty-two inches in circumference, was only twenty-eight since the discharge of the liquor amnii. Being satisfied by auscultation that the placenta was situate about the middle and on the left side of the tumour, the operator chose that place for his incision. The first cut divided the integuments and peritoneum, leaving bare the womb : and, it having been ascertained that neither the ovary nor Fallopian tube were in the way of the knife, the incision was cautiously continued into the interior of the uterus. A copious hæmorrhage followed. At the inferior extremity of the wound was seen, under the margin of the placenta, the child with its legs doubled up towards its belly, the head touching that portion of the uterus at the inguinal ring, and the breech at the bottom of the womb with the back upwards. Without a moment's loss of time, the extraction of the child was commenced by the feet : but the removal was not completed without enlarging the wound, for when the trunk came out the uterus contracted so powerfully as to threaten the child with suffocation. The child was a healthy female, weighing 64 lbs., and measuring twenty-two inches in length. It was at first asphyxiated, but soon gave signs of life; and was solemnly baptized by the parish priest in the evening. mother bore the operation with serenity and heroism, though she was much weakened by the hæmorrhage ; she had convulsions and cold sweats, with a low and irregular pulse, but was relieved by strong beef-ten and an antispasmodic mixture.

The subsequent history of the case is minutely reported, but n few words will suffice for the important details. Light cataplasms of mallows and

hemlock leaves were applied to the womb, the edges of which were kept in apposition by a bandage. The suppuration was at one time profuse; and the patient suffered from inflammation of the uterus and peritoneum. On the 12th June the lochial discharge flowed from the vagina. On the 12th July she menstruated; and on the 11th August she walked out with her infant, both being in perfect health. The tumour remained small, not exceeding in size an ordinary scrotum; and it formed a hysterocele in the inguinal ring to which it was attached by adhesions.

The foregoing narrative concludes all that I have to say on the displacements of the gravid uterus. With it also my task is ended. On glancing through the pages which have been written, many imperfections become apparent. But as some excuse for the defects of this volume, it may be urged that it is no very easy task to sit down to literary work night after night, when the days have been devoted to hospital and other practical duties; and it has only been the hope that I might produce a useful book which has encouraged me to persevere.



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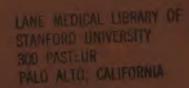
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